Table of Contents

As confidentially submitted to the Securities and Exchange Commission on April 13, 2018.
This draft registration statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains strictly confidential.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form S-1

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Vaccinex, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**2834**	**16-1603202**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

1895 Mount Hope Avenue
Rochester, New York 14620
(585) 271-2700
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Maurice Zauderer, Ph.D.
President and Chief Executive Officer
Vaccinex, Inc.
1895 Mount Hope Avenue
Rochester, New York 14620
(585) 271-2700
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Asher M. Rubin, Esq. **William I. Intner, Esq.** **Hogan Lovells US LLP** **100 International Drive, Suite 2000** **Baltimore, Maryland 21202** **(410) 659-2700**	**Daniel R. Kinel, Esq.** **Harter Secrest & Emery LLP** **1600 Bausch & Lomb Place** **Rochester, New York 14604** **(585) 232-6500**	**Scott E. Royer, CFA, MBA** **Chief Financial Officer** **Vaccinex, Inc.** **1895 Mount Hope Avenue** **Rochester, New York 14620** **(585) 271-2700**

Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act, check the following box. ☐

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☐

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(2)
Common Stock, $0.0001 par value per share	$	$

(1) Estimated solely for the purpose of calculating the amount of the registration fee in accordance with Rule 457(o) under the Securities Act of 1933, as amended, and includes the offering price of shares of common stock that the underwriters have an option to purchase to cover over-allotments, if any.

(2) Calculated pursuant to Rule 457(o) based on an estimate of the proposed maximum aggregate offering price.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

Table of Contents

The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 13, 2018

PRELIMINARY PROSPECTUS

Shares

Common Stock

We are offering shares of our common stock. This is our initial public offering and no public market currently exists for our common stock. We expect the initial public offering price to be between $ and $ per share.

We have applied to list our common stock on The NASDAQ Global Market under the symbol "VCNX." We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 12 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Total
Initial public offering price	$	$
Underwriting discounts and commissions(1)	$	$
Proceeds, before expenses, to us	$	$

(1) See "Underwriting" beginning on page 152 for a description of the compensation payable to the underwriters.

We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of common stock to cover over-allotments, if any.

Delivery of the shares of common stock purchased in this offering is expected to be made on or about , 2018.

Prospectus dated , 2018

TABLE OF CONTENTS

You should rely only on the information contained in this prospectus and any free writing prospectus prepared by or on behalf of us or to which we have referred you. We have not authorized anyone to provide you with information that is different. We are offering to sell shares of our common stock, and seeking offers to buy shares of our common stock, only in jurisdictions where offers and sales are permitted. The information in this prospectus is complete and accurate only as of the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or any sale of shares of our common stock.

For investors outside the United States: neither we nor any of the underwriters have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of shares of our common stock and the distribution of this prospectus outside the United States.

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus to "Vaccinex," "the Company," "we," "us," "our" and similar references refer to Vaccinex, Inc. and its subsidiaries. VACCINEX and ACTIVMAB are our registered trademarks. This prospectus also contains registered marks, trademarks and trade names of other companies. All other trademarks, registered marks and trade names appearing in this prospectus are the property of their respective holders. Solely for convenience, registered marks, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights to these registered marks, trademarks and trade names. We do not intend our use or display of other companies' registered marks, trademarks or trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PROSPECTUS SUMMARY

The following summary highlights information contained elsewhere in this prospectus and is qualified in its entirety by the more detailed information and financial statements included elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. Before you decide to invest in our common stock, you should read and carefully consider the following summary together with the entire prospectus, including our financial statements and the related notes thereto appearing elsewhere in this prospectus and the matters discussed in the sections of this prospectus entitled "Risk Factors," "Selected Consolidated Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Some of the statements in this prospectus constitute forward-looking statements that involve risks and uncertainties. See the section of this prospectus entitled "Special Note Regarding Forward-Looking Statements and Industry Data." Our actual results could differ materially from those anticipated in such forward-looking statements as a result of certain factors, including those discussed in the "Risk Factors" and other sections of this prospectus.

Our Company

We are a clinical-stage biotechnology company engaged in the discovery and development of targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, including cancer, neurodegenerative diseases, and autoimmune disorders. We believe we are the leader in the field of semaphorin 4D, or SEMA4D, biology, and that we are the only company targeting SEMA4D as a potential treatment for cancer, neurodegenerative diseases, or autoimmune disorders. SEMA4D is an extracellular signaling molecule that regulates the migration of immune and inflammatory cells to sites of injury, cancer or infection. We are leveraging our SEMA4D antibody platform and our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15/2503, or VX15, which we believe utilizes novel mechanisms of action. We are focused on the development of VX15 for the treatment of non-small cell lung cancer, or NSCLC, osteosarcoma, melanoma and Huntington's disease. We have developed multiple proprietary platform technologies and are developing product candidates to address serious diseases or conditions that have a substantial impact on day-to-day functioning and for which treatment is not addressed adequately by available therapies. We employ our proprietary platform technologies, including through our work with our academic collaborators, to identify potential product candidates for sustained expansion of our internal product pipeline and to facilitate strategic development and commercial partnerships.

Our lead platform technologies include our SEMA4D antibody platform and our ActivMAb antibody discovery platform.

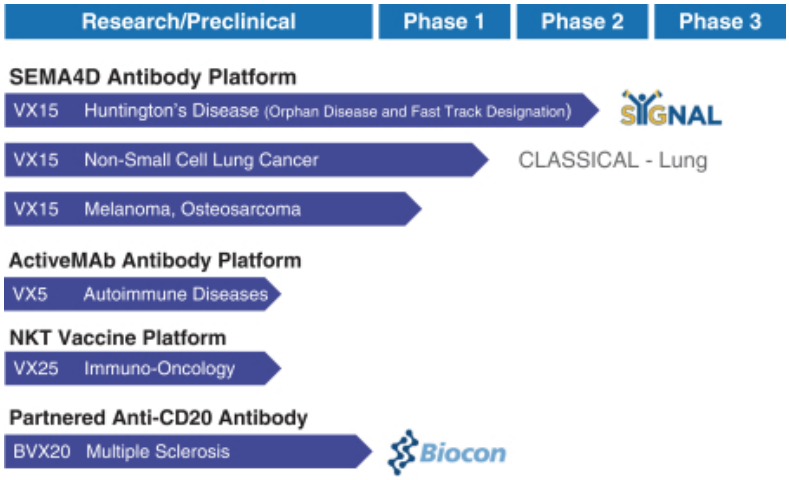
- ***Our SEMA4D antibody platform*** is the application of our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15 for the treatment of various indications, including cancer and neuroinflammatory and neurodegenerative diseases. VX15's mechanisms of action block the SEMA4D signal and activate innate physiological mechanisms to respond to tumors or tissue injury. We have shown in preclinical studies that the biological activities associated with an antibody blockade of SEMA4D can promote immune cell infiltration into tumors and the repair or prevention of neurological damage in neuroinflammatory and neurodegenerative diseases.
- ***Our ActivMAb antibody discovery platform*** is a proprietary human antibody discovery platform based on a novel method for expressing large and diverse libraries of high affinity, full-length human monoclonal antibodies on the surface of vaccinia, a mammalian virus. We believe our ActivMAb technology offers (i) rapid generation of high affinity, full-length, human monoclonal antibodies synthesized and naturally modified in mammalian cells, (ii) expression and selection of antibodies that easily and predictably transition to manufacturing in mammalian lines, and (iii) an innovative and efficient method for selecting antibodies against multi-pass membrane proteins, an important class of

pharmacological targets. Our product candidate VX5 was generated by our ActivMAb platform and is currently in preclinical development for the treatment of autoimmune disorders. We intend to continue to utilize our ActivMAb platform to identify additional product candidates for our own pipeline development and for strategic collaborations.

In addition, we and our academic collaborators are using our Natural Killer T, or NKT, cell-based vaccine platform, which we refer to as our NKT vaccine platform, to discover product candidates that target and extend the activity of NKT cells. NKT cells work directly to kill certain types of parasites and cells, including tumor cells and virus-infected cells. We are applying our agonists to direct NKT cells to the site of tumors, potentially enhancing tumor-specific immunity through recruitment and activation of cytotoxic T cells and antibody-armed natural killer cells that will work to eradicate the tumor.

We have no products approved for commercial sale and have not generated any product revenue to date and have generated only limited amount of service revenue from collaboration agreements. We anticipate that we will continue to incur losses for the foreseeable future and we may never be profitable. Our recurring net losses and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern, as discussed in Note 1 to our consolidated financial statements as of and for the years ended December 31, 2016 and 2017. Our independent registered public accounting firm has also noted this in the opinion they issued on our consolidated financial statements for the years ended December 31, 2016 and 2017.

Our Product Pipeline



Our lead product candidate VX15 is currently in clinical development for the treatment of NSCLC, osteosarcoma and Huntington's disease. Our additional product candidates VX5 and VX25 are in earlier stages of development and were generated using our ActivMAb and NKT vaccine platforms, respectively. We believe our multiple platform technologies position us well for continued pipeline expansion and partnership opportunities going forward.

VX15

VX15 is a humanized monoclonal antibody that binds and blocks the signaling activity of SEMA4D. We are advancing VX15 with what we believe to be novel mechanisms of action for the treatment of cancer and certain

neurodegenerative diseases, including Huntington's disease. To date, 164 patients have been treated with VX15 in four Phase 1 clinical trials and one Phase 2 clinical trial in separate indications.

- ***NSCLC, Osteosarcoma and Melanoma.*** VX15 is currently being studied as a treatment for advanced solid tumors, including NSCLC, osteosarcoma and melanoma. We have observed in our study of VX15 in preclinical tumor models that SEMA4D regulates infiltration of immune precursor cells into tumor tissue. Our preclinical data suggest that blocking SEMA4D promotes infiltration of immune cells that can eradicate the tumor. We have also observed in our preclinical studies the potential for synergy between VX15 and an immune checkpoint blockade inhibitor, or checkpoint inhibitor, when used in combination. We completed a Phase 1 clinical trial of VX15 monotherapy and released top-line data in October 2014. VX15 was well tolerated in this clinical trial and showed early evidence of immune mediated activity. In October 2017 in collaboration with Merck KGaA, Darmstadt, Germany, or Merck KGaA, we initiated a Phase 1b/2 clinical trial of VX15 in combination with avelumab, an inhibitor of the PD-1/PD-L1 checkpoint pathway, in patients with NSCLC who have not previously been treated with immunotherapy, which we refer to as the CLASSICAL–Lung clinical trial. In February 2018, the Children's Oncology Group, or COG, with financial support of the National Cancer Institute initiated a Phase 1/2 clinical trial of VX15 as a single agent in pediatric patients with recurrent, relapsed, or refractory solid tumors, including osteosarcoma. In the second quarter of 2018, an investigator-sponsored clinical trial, or IST, of VX15 in combination with *Yervoy*® (ipilimumab) and with *Opdivo*® (nivolumab) is expected to begin at UCLA's Jonsson Comprehensive Cancer Center in patients with advanced melanoma who have progressed on prior anti-PD1/L1 based therapies.
- ***Huntington's Disease***. We are studying VX15 as a treatment for Huntington's disease, which is a neurodegenerative genetic disorder that typically manifests in mid-adult life. Our study of VX15 in Huntington's disease is based on our prior research of neurodegenerative disease mechanisms, where we showed in preclinical models that SEMA4D triggers activation of both microglia and astrocytes, the innate inflammatory cells of the central nervous system. The chronic activation of microglia and astrocytes has been implicated as an important disease mechanism in Huntington's disease, progressive multiple sclerosis, or MS, and other neurodegenerative disorders. We initiated a Phase 2 clinical trial, which we refer to as the SIGNAL study, in July 2015 in early-stage and prodromal Huntington's disease patients. This clinical trial builds upon preclinical studies in an animal model of Huntington's disease and safety data from a Phase 1 dose-escalation clinical trial of VX15 in MS patients that we completed in November 2014. The SIGNAL study has an adaptive design, and interim analysis of Cohort A data for 36 randomized patients was completed in April 2017. On the basis of this data, the design of the Cohort B study was modified. Eighty-two of a planned 200 patients have been enrolled in Cohort B as of January 2018, and the estimated primary completion date is May 2020. The U.S. Food and Drug Administration, or the FDA, Division of Neurology Products has granted both orphan drug designation and Fast Track designation to VX15 for Huntington's disease.

Other Product Candidates

VX5

We discovered VX5 using our ActivMAb platform. VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissues, and is currently in preclinical development with academic collaborators for the treatment of autoimmune disorders. In preclinical studies, anti-CXCL13 antibodies, such as VX5, have been shown to reduce CXCL13-induced B cell and T helper cell migration, which contributes to inflammatory and autoimmune responses.

VX25

VX25 is an investigational, bi-specific molecule based on our NKT vaccine platform. VX25 seeks to address major challenges for the therapeutic application of NKT cell stimulation for cancer immunotherapy. We and our academic collaborators have designed molecules that incorporate a potent NKT-activating glycolipid in one arm and a tumor-targeting antibody fragment in a second arm.

Our Strategy

Our goal is to rapidly and cost-effectively develop targeted biotherapeutics that will provide safe, substantial and sustained benefits to patients with serious diseases and unmet medical needs. The principal elements of our business strategy are to:

- develop VX15 in combination with checkpoint inhibitors as a therapy for patients with NSCLC;
- develop VX15 as a therapy in Huntington's disease;
- apply our SEMA4D antibody platform to treat serious diseases with unmet needs, including additional neurodegenerative disease and cancer indications;
- leverage our existing SEMA4D collaborations and establish new partnerships; and
- utilize our ActivMAb antibody discovery platform to identify human antibodies for our own pipeline development and for strategic collaborations.

Risks Associated with Our Business

Our ability to implement our business strategy is subject to numerous risks and uncertainties. As a clinical-stage biotechnology company, we face many risks inherent in our business and our industry generally. You should carefully consider all of the information set forth in this prospectus and, in particular, the risks described under the section of this prospectus entitled "Risk Factors," prior to making an investment in our common stock. These risks include, among others, the following:

- our success is primarily dependent on the successful development, regulatory approval and commercialization of our lead product candidate VX15, which is in early development;
- if our clinical trials are not successful, or if our clinical results do not reflect results seen in previously conducted preclinical studies, we may be unable to obtain regulatory approvals for our product candidates;
- we are subject to regulatory approval processes that are lengthy, time-consuming and unpredictable, and we may not obtain approval for any of our product candidates from the FDA or foreign regulatory authorities;
- we have no source of product revenue to date and have generated only limited amount of service revenue from collaboration agreements. We may never become profitable and may incur substantial and increasing net losses for the foreseeable future and therefore we may need to obtain additional funding to continue operations. For the fiscal year ended December 31, 2017, we reported a net loss of $18.8 million, and as of December 31, 2017, we had an accumulated deficit of $187.2 million;
- our recurring net losses and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern. Our independent registered public accounting firm has also noted this in the opinion they issued on our consolidated financial statements for the years ended December 31, 2016 and 2017;
- our competitors may develop or market products that are more effective, are safer, or reach the market sooner than our product candidates;

- it is difficult and costly to protect our intellectual property rights;
- we depend on key personnel for our continued operations and future success and a loss of certain key personnel, particularly our Chief Executive Officer, could significantly hinder our ability to move forward with our business plan; and
- we depend on the performance of third parties, including third-party manufacturers.

Our Corporate Information

We were incorporated under the laws of the State of Delaware in April 2001. Our principal executive offices are located at 1895 Mount Hope Avenue, Rochester, New York 14620, and our telephone number is (585) 271-2700. Our website address is www.vaccinex.com. Our website and the information contained on, or that can be accessed through, the website will not be deemed to be incorporated by reference in, and are not considered part of, this prospectus. You should not rely on any such information in making your decision to purchase our common stock.

The Offering

Common stock offered by us	shares
Common stock to be outstanding immediately following this offering	shares
Over-allotment option	We have granted the underwriters an option for 30 days from the date of this prospectus to purchase up to additional shares of common stock to cover over-allotments, if any.
Use of proceeds	We expect to use the proceeds we receive from this offering to fund our ongoing development of VX15 as a therapy in patients with NSCLC and Huntington's disease, to fund continued preclinical research using our platform technologies, and for working capital and general corporate purposes. See the section of this prospectus entitled "Use of Proceeds" for a more complete description of the intended use of proceeds from this offering.
Risk factors	You should read the section of this prospectus entitled "Risk Factors" for a discussion of factors to carefully consider before deciding to invest in shares of our common stock.
Proposed NASDAQ Global Market symbol	VCNX

The number of shares of our common stock to be outstanding immediately following this offering set forth above is based on shares of our common stock outstanding as of December 31, 2017, which gives effect to each of the following, assuming such actions occurred on December 31, 2017: (i) a -for- reverse stock split of our common stock to be effected prior to this offering; (ii) the conversion of all outstanding shares of our preferred stock into an aggregate of shares of our common stock; (iii) the repayment of a $4.0 million convertible promissory note issued in January 2017, or the January 2017 Note, and waiver in March 2018 of the related option to participate in a future financing; and (iv) the conversion of a $1.5 million convertible promissory note issued in June 2016, or the June 2016 Note, and accrued interest into an aggregate of shares of our common stock.

The number of shares of our common stock to be outstanding immediately following this offering excludes:

- shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, LP, or Vaccinex Products, of which shares will be beneficially owned by FCMI Parent Co., or FCMI Parent, our majority stockholder;
- shares of common stock issuable upon the exchange of limited partnership interests of VX3 (DE) LP, or VX3, of which shares will be owned by FCMI Parent;
- shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2017 under our 2001 Employee Equity Plan, or 2001 Plan, and our 2011 Employee Equity Plan, or 2011 Plan, at a weighted-average exercise price of $ per share; and
- shares of our common stock reserved for issuance under our 2018 Omnibus Incentive Plan, or 2018 Plan, which will become effective upon completion of this offering, as well as any future increases in the number of shares of our common stock reserved for issuance under the 2018 Plan.

Except as otherwise indicated, the information in this prospectus assumes or gives effect to the following as if each had occurred as of December 31, 2017:

- a -for- reverse stock split of our common stock to be effected prior to this offering;
- no exercise by the underwriters of their over-allotment option to purchase up to additional shares of common stock from us;
- the conversion of all outstanding shares of our preferred stock into an aggregate of shares of our common stock;
- the receipt of an $8.0 million capital contribution from VX3 noncontrolling interests in March 2018;
- the repayment of the January 2017 Note, the waiver in March 2018 of the related option to participate in a future financing, and the write-off of derivative liabilities as a result of the repayment and waiver;
- the conversion of the June 2016 Note and accrued interest into an aggregate of shares of our common stock and the related reclassification of the embedded derivative liability associated with the June 2016 Note into additional paid-in capital; and
- the filing of our amended and restated certificate of incorporation and the adoption of our amended and restated bylaws, which will occur in connection with the completion of this offering.

Summary Consolidated Financial Data

The following table summarizes our consolidated financial data. We have derived the following consolidated statements of operations data for the years ended December 31, 2016 and 2017 from our audited consolidated financial statements, included elsewhere in this prospectus. Our historical results for prior periods are not necessarily indicative of results to be expected for any future period. The summary consolidated financial data presented below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes thereto included elsewhere in this prospectus. The summary consolidated financial data in this section is not intended to replace our consolidated financial statements and the related notes thereto.

(in thousands, except share and per share data)	Year Ended December 31, 2016	2017
Consolidated Statement of Operations Data:		
Revenue	$ 316	$ 90
Costs and expenses:		
Cost of revenue	115	160
Research and development(1)	16,028	16,551
General administrative(1)	4,432	4,483
Total costs and expenses	20,575	21,194
Loss from operations	(20,259)	(21,104)
Change in fair value of derivative liabilities	9,310	3,743
Interest expense	(2,990)	(1,358)
Other expense, net	(4)	(40)
Loss before provision for income taxes	(13,943)	(18,759)
Provision for income taxes	–	–
Net loss	(13,943)	(18,759)
Net loss attributable to noncontrolling interests	–	37
Net loss attributable to Vaccinex, Inc.	$ (13,943)	$ (18,722)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)
Deemed dividend from Series C redeemable convertible preferred stock modification	(9,079)	–
Net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (26,233)	$ (21,933)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (2.53)	$ (1.99)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, Inc., basic and diluted	10,381,417	11,019,375
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited) (2)(3)		$
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)(4)		

(1) Includes stock-based compensation expense as follows:

(in thousands)	Year Ended December 31, 2016	2017
Research and development	$ 65	$ 54
General and administrative	70	265
Total stock-based compensation expense	$135	$319

(2) Pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders for the year ended December 31, 2017 is calculated by dividing the pro forma net loss attributable to Vaccinex, Inc. common stockholders for the respective periods by the weighted-average shares used in computing pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders for the respective periods. All potential dilutive common stock equivalents outstanding for the periods presented have been excluded from the calculation of pro forma diluted net loss per share attributable to Vaccinex, Inc. common stockholders as their effect is anti-dilutive. In contemplation of this offering, pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders gives effect to (i) the conversion of all outstanding shares of preferred stock into shares of our common stock as if the conversion had occurred as of January 1, 2017; (ii) the repayment of the January 2017 Note, the waiver of the related option to participate in a future financing, and the write-off of derivative liabilities as a result of the repayment and waiver as if the repayment had occurred as of January 1, 2017 or the date of issuance, if later; (iii) the conversion of the June 2016 Note and accrued interest into shares of our common stock and the related reclassification of the embedded derivative liability within the convertible promissory notes to additional paid-in capital as if the conversion had occurred as of January 1, 2017. The pro forma net loss per share attributable to Vaccinex, Inc. common stockholders does not include proceeds to be received from nor does it include shares expected to be sold in the assumed initial public offering.

(3) Had this offering occurred as of January 1, 2017, pro forma net loss attributable to Vaccinex, Inc. common stockholders would have been $ million for the year ended December 31, 2017 resulting from the following adjustments to net loss attributable to Vaccinex, Inc. common stockholders for the same period: (i) reduction of $ in accrued interest expense associated with our outstanding convertible promissory notes; (ii) reduction of $ million in cumulative but undeclared dividends on our preferred stock; (iii) reduction of $ in interest expense related to the amortization of the derivative debt discount; and (iv) reduction of $ related to the change in fair value of the derivative liabilities.

(4) The weighted-average shares used in computing pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders would have been for the year ended December 31, 2017 resulting from the following adjustment to weighted-average shares used in computing basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders for the same period: (i) the conversion of all outstanding shares of our preferred stock into an aggregate of shares of common stock as if the conversion had occurred as of January 1, 2017 presented and (ii) the conversion of the June 2016 Note into shares of common stock based on an assumed conversion price of $ per share, which is 85% of the midpoint of the estimated price range set forth on the cover page of this prospectus, as if the conversion had occurred as of the date of issuance.

(in thousands)	December 31, 2017		
	Actual	Pro Forma(1)	Pro Forma As Adjusted(10)(11)
Consolidated Balance Sheet Data:			
Cash and cash equivalents	$ 4,180	$ (2)	$
Working capital	809	(3)	
Total assets	5,575		
Convertible promissory notes to related party, net	2,813	—(4)	
Derivative liabilities	369	—(5)	
Total liabilities	7,347	(6)	
Redeemable convertible preferred stock	111,718	—(7)	
Convertible preferred stock	7,684	—(8)	
Total stockholders' (deficit) equity	(113,490)	(9)	

(1) The pro forma column gives effect to (i) receipt of an $8.0 million capital contribution from VX3 noncontrolling interests in March 2018; (ii) the repayment of the January 2017 Note, the waiver in March 2018 of the related option to participate in a future financing, and the write-off of derivative liabilities as a result of the repayment and waiver; (iii) the nonrecurring conversion of all outstanding shares of our preferred stock and the June 2016 Note and accrued interest into shares of our common stock and the related nonrecurring reclassification of the embedded derivative liability within the outstanding convertible promissory note to additional paid-in capital had this initial public offering occurred on December 31, 2017. Further discussion on the pro forma adjustments related to the line items presented in this table is presented below in notes (2)–(9).

(2) Our cash and cash equivalents would have increased by $4.0 million from receipt of an $8.0 million capital contribution from VX3 noncontrolling interests, offset by repayment of the $4.0 million January 2017 Note in March 2018;

(3) Our working capital would have increased by $ had this offering occurred on December 31, 2017 due to (i) $4.0 million cash and cash equivalents increase as stated in note (2) above and (ii) the conversion of the accrued interest associated with the June 2016 Note into shares of our common stock based on an assumed conversion price of $ per share, which is 85% of the midpoint of the estimated price range set forth on the cover of this prospectus, and the resulting reclassification of the accrued interest liability to common stock and additional paid-in capital.

(4) Our convertible promissory notes to related party would have decreased by $ million had this offering occurred on December 31, 2017 due to the repayment of the January 2017 Note and the conversion of the June 2016 Note into an aggregate of shares of our common stock based on an assumed conversion price of $ per share, which is 85% of the midpoint of the estimated price range set forth on the cover of this prospectus.

(5) Our derivative liabilities associated with our convertible promissory notes would have decreased by $ million had this offering occurred on December 31, 2017 due to the repayment of the January 2017 Note and waiver of the related option, the write off of the related derivative liabilities, and the conversion of the June 2016 Note and the related accrued interest and the resulting reclassification of the embedded derivative liability to additional paid-in capital.

(6) Our total liabilities would have decreased by $ million had this offering occurred on December 31, 2017 due to the repayment of the January 2017 Note and waiver of the related option, the write off of the related derivative liabilities, the conversion of the June 2016 Note and the related accrued interest and the resulting reclassification of the embedded derivative liability to additional paid-in capital as described above.

(7) Our redeemable convertible preferred stock would have decreased by $ million had this offering occurred on December 31, 2017 due to the conversion of all outstanding shares of our Series B, B-1, B-2, C and D redeemable preferred stock into an aggregate of shares of our common stock and the resulting reclassification of the redeemable convertible preferred stock into common stock and additional paid-in capital. In addition, had this offering occurred on December 31, 2017, we would have issued shares of our common stock to the holders of our Series C redeemable preferred stock as payment for all cumulative accrued dividends on Series C redeemable preferred stock, whether declared or not, based on a conversion rate of $ per share.

(8) Our convertible preferred stock would have decreased by $ million had this offering occurred on December 31, 2017 due to the conversion of all outstanding shares of our Series A preferred stock into shares of our common stock and the resulting reclassification of the convertible preferred stock into common stock and additional paid-in capital.

(9) Total stockholders' (deficit) equity would have increased by $ million had this offering occurred on December 31, 2017 due to (i) the repayment of the January 2017 Note, the waiver in March 2018 of the related option to participate in a future financing, and the write-off of derivative liabilities as a result of the repayment and waiver and (ii) the conversion of the June 2016 Note and accrued interest and all outstanding shares of our redeemable convertible preferred stock into common stock and additional paid-in capital, and the related reclassification of the embedded derivative liability associated with the June 2016 Note into additional paid-in capital as described above.

(10) The pro forma as adjusted column gives further effect to the sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us as if the sale of the shares in this offering had occurred as of December 31, 2017.

(11) Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, would increase (decrease) each of cash and cash equivalents, working capital, total assets and total stockholders' (deficit) equity by approximately $ million, assuming that the number of shares offered by us, as set forth on the cover of this prospectus, remains the same, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. Each increase (decrease) of 1.0 million shares in the number of shares offered by us would increase (decrease) each of cash and cash equivalents, working capital, total assets and total stockholders' (deficit) equity by approximately $ million, assuming that the assumed initial public offering price remains the same, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The pro forma as adjusted information discussed above is illustrative only and will adjust based on the actual initial public offering price and other terms of this offering determined at pricing.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before making your decision to invest in shares of our common stock, you should carefully consider the risks described below, together with the other information contained in this prospectus, including our financial statements and the related notes appearing at the end of this prospectus. We cannot assure you that any of the events discussed below will not occur. These events could have a material and adverse impact on our business, results of operations, financial condition and cash flows. If that were to happen, the trading price of our common stock could decline, and you could lose all or part of your investment.

Risks Related to Our Financial Position and Capital Needs

We have incurred net losses since our inception and anticipate that we will continue to incur net losses for the foreseeable future.

We are a clinical-stage biotechnology company with a limited operating history. Investment in biotechnology product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, obtain regulatory approval or become commercially viable. We have not generated any revenue from product sales to date, and we continue to incur significant development and other expenses related to our ongoing operations. As a result, we are not and have never been profitable and have incurred losses in each period since our inception in 2001. For the years ended December 31, 2016 and 2017, we reported a net loss of $13.9 million and $18.8 million, respectively. As of December 31, 2017, we had an accumulated deficit of $187.2 million.

We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek regulatory approvals for, our product candidates. We may also encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenues, if any. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

We currently have no source of product revenue and may never achieve or maintain profitability.

To date, we have not generated any revenue from our product candidates. Our ability to generate product revenue and become profitable depends on a number of factors, including, but not limited to, our ability to:

- successfully complete research and clinical development of current and future product candidates;
- timely commence, enroll, conduct and complete clinical trials;
- secure and maintain collaborations, licensing or other arrangements for the future development and/or commercialization of our product candidates, as well as the terms of those arrangements;
- complete and submit applications to, and obtain regulatory approval from, the FDA and foreign regulatory authorities;
- identify and develop additional product candidates;
- achieve market acceptance for our product candidates if and when they are approved;
- develop a commercial organization capable of sales, marketing and distribution in our core strategic markets, or enter into relationships with third parties to do the same;
- obtain coverage and adequate product reimbursement from third-party, including government, payors;
- establish, maintain and protect our intellectual property rights; and
- attract, hire and retain additional qualified personnel.

In addition, due to the numerous risks and uncertainties associated with product development, including that our product candidates may not advance through development or achieve the endpoints of applicable clinical trials, we are unable to predict the timing or amount of expenses, or when or if we will generate revenue and ultimately be able to achieve or maintain profitability. Even if we are able to complete the process described above, we anticipate incurring significant costs associated with commercializing these products.

Even if we are able to generate revenues from the sale of our products, we may not become profitable and may need to obtain additional funding to continue operations. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

We will require additional capital to finance our operations, which may not be available to us on acceptable terms, if at all. As a result, we may not complete the development and commercialization of our product candidates or develop new product candidates.

Our operations have consumed substantial amounts of cash since inception. We expect to continue to spend substantial amounts to advance the clinical development of our product candidates. We may develop our own commercial organization to address specific markets, which may require additional capital. We believe the net proceeds from this offering, together with our existing cash and cash equivalents, will fund our projected operating requirements until the end of 2019. However, circumstances may cause us to consume capital more rapidly than we currently anticipate. For example, as we move our lead product candidate through clinical trials and submit Investigational New Drug applications for new indications or other product candidates, we may have adverse results requiring us to find new product candidates or our development plans and anticipated clinical trial design may need to be altered.

If we need to secure additional financing, such additional fundraising efforts may divert our management from our day-to-day activities, which may adversely affect our ability to develop and commercialize future product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates or the range of indications for which they are developed. If we raise additional funds through the issuance of additional debt or equity securities, it could result in dilution to our existing stockholders, and/or increased fixed payment obligations. Furthermore, these securities may have rights senior to those of our common stock and could contain covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Any of these events could significantly harm our business, financial condition and prospects.

Our future capital requirements will depend on many factors, including, among others:

- the scope, rate of progress, results and costs of our clinical trials, preclinical studies and other research and development activities;
- the timing of, and the costs involved in, obtaining regulatory approvals for any of our current or future drug candidates we may develop or in-license;
- the number and characteristics of product candidates that we develop or in-license, if any;
- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the effect of competing technological efforts and market developments;
- our ability to establish collaborative arrangements to the extent necessary;
- the economic and other terms, timing and success of any collaboration, licensing, distribution or other arrangements into which we may enter in the future;

- revenues received from any product candidates that are approved; and
- payments received under any current or future strategic partnerships.

If a lack of available capital prevents us from expanding our operations or otherwise capitalizing on our business opportunities, our business, financial condition and results of operations could be materially adversely affected.

Our ability to continue as a going concern will require us to obtain additional financing to fund our current operations, which may be unavailable on acceptable terms, or at all.

Our recurring net losses and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern, as discussed in Note 1 to our consolidated financial statements as of and for the years ended December 31, 2016 and 2017. Our independent registered public accounting firm has also noted this in the opinion they issued on our consolidated financial statements for the years ended December 31, 2016 and 2017. Our ability to continue as a going concern is dependent upon our ability to obtain additional equity or debt financing, attain further operating efficiencies, reduce expenditures, and, ultimately, to generate revenue. We will have to raise additional working capital and funds for operations. However, no assurance can be given that additional financing will be available, or, if available, will be on terms acceptable to us. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

We may have higher than anticipated tax liabilities, including related to our ability to use NOL carryforwards and as a result of the effects of changes in tax laws and regulations.

We plan to use our current year operating losses to offset taxable income from any revenue generated from operations. To the extent that our taxable income exceeds any current year operating losses, we plan to use our NOL carryforwards to offset income that would otherwise be taxable. However, under the Tax Reform Act of 1986, the amount of benefits from our NOL carryforwards may be impaired or limited if we incur a cumulative ownership change of more than 50%, as interpreted by the U.S. Internal Revenue Service, or IRS, over a three-year period. As a result, our use of federal NOL carryforwards could be limited by the provisions of Section 382 of the U.S. Internal Revenue Code of 1986, as amended, or the Code, depending upon the timing and amount of additional equity securities that we issue. In addition, we have not performed an analysis of limitations, and we may have experienced an ownership change under Section 382 as a result of past financings. State NOL carryforwards may be similarly limited. Any such disallowances may result in greater tax liabilities than we would incur in the absence of such a limitation and any increased liabilities could adversely affect our business, results of operations, financial condition and cash flow.

On December 22, 2017, the Tax Cuts and Jobs Act, or the Tax Act, was signed into law. We are in the process of analyzing the Tax Act and its possible effects on us, including on our subsidiaries. The Tax Act, among other things, reduces the corporate tax rate to 21% effective January 1, 2018, generally limits utilization of losses generated after 2017 to 80% of future annual taxable income, eliminates the corporate alternative minimum tax, and modifies or repeals many business deductions and credits.

The SEC staff issued Staff Accounting Bulletin 118, or SAB 118, which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the U.S. tax reform enactment date for companies to complete the accounting under Accounting Standards Codification 740, or ASC 740. In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the U.S. tax reform for which the accounting under ASC 740 is complete. Specifically, we revalued our U.S. deferred tax assets and liabilities due to the federal income tax rate reduction from 35% to 21%. Since we have provided a full valuation allowance against our deferred tax assets, the revaluation of the deferred tax assets did not have a material impact on any period presented. The ultimate impact of the income tax effects of the Tax Act may differ due to, among other things, additional analysis, changes in interpretations, and additional regulatory guidance that may be issued as a result of the Tax Act. The accounting is expected to be complete when our 2017 U.S. corporate income tax return is filed in 2018.

Risks Related to Our Business and Industry

Our product candidates are in preclinical development or early stages of clinical development. We cannot predict if we will receive regulatory approval to commercialize any of our product candidates.

All of our product candidates are in early stages of development, and they will require extensive preclinical and clinical testing. We cannot predict with any certainty if or when we might submit a biologics license application, or BLA, for regulatory approval for any of our product candidates or whether any such BLA will be accepted for review by the FDA, or whether any BLA will be approved.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our target indications. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the results of later clinical trials will replicate the results of prior clinical trials. If our clinical trial results are not successful, we may terminate the clinical trials for a product candidate and abandon any further research or testing of that product candidate. Any delay in, or termination of, our clinical trials will delay and possibly preclude the submission of any BLAs with the FDA and, ultimately, our ability to obtain approval for and commercialize our product candidates and generate product revenues.

We depend heavily on the success of our lead product candidate VX15, and if we had to cease developing VX15 it would have adverse effects on our business and future prospects.

VX15 is our most advanced product candidate, and we are focused on developing it for NSCLC and Huntington's disease. Additionally, in coordination with us, one IST is evaluating VX15 in osteosarcoma and another is expected to study VX15 in melanoma. We do not have control over trial design or conduct of investigator sponsored trials, which may identify adverse reactions associated with our product candidates. Any problems that arise in development of VX15 for one indication, or in one trial, may have an adverse effect on the development of VX15 for other indications and could cause us to cease development of VX15 altogether. Similarly, as part of our SEMA4D antibody platform strategy, we intend to also develop VX15 in additional neurodegenerative disease and cancer indications. Any adverse result or event that causes us to cease developing or limits our development of VX15 would have adverse effects on our existing business, as well as our future prospects.

If our product candidates fail to meet safety and efficacy endpoints in clinical trials to the satisfaction of regulatory authorities or do not otherwise produce positive results, they will not receive regulatory approval, and we will be unable to market them.

Before obtaining marketing approval from regulatory authorities for the sale of our future product candidates, we or our collaborators must conduct extensive clinical trials to demonstrate the safety and efficacy of the product candidates in humans. Clinical testing is expensive and difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing. The outcome of preclinical studies and early clinical trials may not predict the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety profiles, notwithstanding promising results in earlier trials. Despite the results reported in our Phase 1 clinical trials for VX15 and in preclinical studies for VX15 and our other product candidates, we do not know whether the clinical trials we or our collaborators may conduct will demonstrate adequate efficacy and safety to result in regulatory approval to market any of our product candidates in any particular jurisdiction or jurisdictions. If later-stage clinical trials do not produce favorable results, our or our collaborators' ability to achieve regulatory approval for any of our product candidates may be adversely impacted.

If we experience delays in clinical testing, we will be delayed in obtaining approval of our product candidates, our costs may increase and our business may be harmed.

We do not know whether any of our clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Our product development costs will increase if we experience delays in clinical testing. Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our product candidates or allow our competitors to bring products to market before we do, which would impair our ability to successfully commercialize our product candidates and may harm our business, results of operations and prospects. Events which may result in a delay or failure in attaining successful completion of clinical development include:

- delays or failure in obtaining approval from institutional review boards, or IRBs, or ethics committees, or ECs, to begin clinical trials at study sites;
- imposition of a clinical hold by the FDA, or a decision by the FDA, other regulatory authorities, IRBs, ECs, or recommendation by a data safety monitoring board to suspend or terminate clinical trials at any time for safety issues or for any other reason;
- delays in reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical trial sites;
- deviations from the trial protocol by clinical trial sites and investigators, or failure to conduct the trial in accordance with regulatory requirements;
- failure of third parties, such as CROs, to satisfy their contractual duties or meet expected deadlines;
- delays in the testing, validation, manufacturing and delivery of the product candidates to the clinical sites;
- for clinical trials in selected patient populations, delays in identification and auditing of central or other laboratories and the development, transfer and validation of assays or tests to be used to identify selected patients;
- delays in enrolling and having patients complete participation in a trial or return for post-treatment follow-up;
- delays caused by patients dropping out of a trial due to side effects, disease progression or other reasons;
- withdrawal of clinical trial sites from our clinical trials as a result of changing standards of care or the ineligibility of a site to participate in our clinical trials; or
- changes in government regulations or administrative actions or lack of adequate funding to continue the clinical trials.

Any inability of us or our collaborators to timely complete clinical development could result in additional costs to us or impair our ability to generate product revenues or development, regulatory, commercialization and sales milestone payments, or royalties on product sales.

If we or our collaborators encounter difficulties enrolling patients in clinical trials, the clinical trials could be delayed or otherwise adversely affected.

The timely completion of clinical trials largely depends on patient enrollment. Many factors affect patient enrollment, including:

- the nature and size of the patient population;
- the number and location of participating clinical sites;
- competition with other companies for clinical sites or patients;
- design of the trial protocol;
- ability to obtain informed consents from patients; and

- clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available therapies, including any drugs that may already be approved for the indications we are investigating.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay or terminate ongoing or planned clinical trials, either of which would have an adverse effect on our business.

We may not successfully identify, develop or commercialize potential product candidates.

The success of our business depends primarily upon our ability to identify and validate new biotherapeutics and/or applications, including through the use of our SEMA4D antibody platform, our ActivMAb antibody discovery platform and our NKT cell-based vaccine platform, and identify, develop and commercialize antibodies and product candidates, which we may develop ourselves or develop on behalf of or out-license to others. Our research efforts may initially show promise in discovering potential new targets or biotherapeutic product candidates, yet fail to result in product candidates for clinical development for a number of reasons, including:

- our research methodology may not successfully identify potential antibodies that can serve as biotherapeutic product candidates to the targets that we or our collaborators believe are medically important;
- we identify and select from our ActivMAb and NKT vaccine platforms novel, untested antibodies for the particular targets we are pursuing, which we may fail to validate after further research work;
- we may encounter product manufacturing difficulties that limit yield or produce undesirable characteristics that increase the cost of goods, cause delays or make the product candidates unmarketable;
- our product candidates may not demonstrate a meaningful benefit to patients; and
- our collaborators may change their development profiles or plans for potential product candidates or abandon a therapeutic area or the development of a partnered product.

If any of these events occur, we may be forced to abandon our development efforts for a program or programs, which would have a material adverse effect on our business, operating results and prospects and could potentially cause us to cease operations. Research programs to identify new product candidates require substantial technical, financial and human resources. We may focus our efforts and resources on potential programs or product candidates that ultimately prove to be unsuccessful.

Our product candidates may cause undesirable side effects or have other properties that could prevent their regulatory approval, limit the commercial scope of their approved uses, or result in significant negative consequences following any marketing approval.

Undesirable side effects caused by our product candidates could cause us or regulatory authorities to delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authorities. Results of our trials could reveal unacceptable side effects or unexpected characteristics. In such an event, we could suspend or terminate our clinical trials or the FDA or comparable foreign regulatory authorities could order us to cease clinical trials or deny approval of our product candidates for any or all targeted indications. Drug-related side effects could affect patient recruitment or the ability of enrolled subjects to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by any such products, a number of potentially significant negative consequences could result, including:

- we may suspend marketing of, or withdraw or recall, such product;
- regulatory authorities may withdraw approvals of such product;
- regulatory authorities may require additional warnings on the label or otherwise seek to limit the scope of the approved uses reflected in the label of such product;
- the FDA may require the use of or modification of a Risk Evaluation and Mitigation Strategy, or REMS, or a comparable foreign regulatory authority may require the establishment or modification of a similar strategy that may, for instance, restrict distribution of our products and impose other implementation requirements on us;
- regulatory authorities may require that we conduct post-marketing studies;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of the particular product candidate or otherwise materially harm the commercial prospects for the product candidate, if approved, and could significantly harm our business, results of operations and prospects.

We may be required to suspend, repeat or terminate our clinical trials if they are not conducted in accordance with regulatory requirements, the results are negative or inconclusive or the trials are not well designed.

Clinical trials must be conducted in accordance with the FDA's current Good Clinical Practices requirements, or cGCPs, or analogous requirements of applicable foreign regulatory authorities. Clinical trials are subject to oversight by the FDA, other foreign governmental agencies, and IRBs or ECs at the study sites where the clinical trials are conducted. In addition, clinical trials must be conducted with product candidates produced in accordance with applicable current Good Manufacturing Practices, or cGMPs. Clinical trials may be suspended by the FDA, other foreign regulatory authorities, or us, or by an IRB or EC with respect to a particular clinical trial site, for various reasons, including:

- deficiencies in the conduct of the clinical trials, including failure to conduct the clinical trial in accordance with regulatory requirements or study protocols;
- deficiencies in the clinical trial operations or trial sites;
- unforeseen adverse side effects or the emergence of undue risks to study subjects;
- deficiencies in the trial design necessary to demonstrate efficacy;
- the product candidate may not appear to offer benefits over current therapies; or
- the quality or stability of the product candidate may fall below acceptable standards.

We have limited experience designing and implementing clinical trials, and failure to adequately design a trial, or incorrect assumptions about the design of the trial, could adversely affect the ability to initiate the trial, enroll patients, complete the trial, or obtain regulatory approval on the basis of the trial results, as well as lead to increased or unexpected costs.

The design and implementation of clinical trials is a complex process. We have limited experience designing and implementing clinical trials, and we may not successfully or cost-effectively design and implement clinical trials that achieve our desired clinical endpoints efficiently, or at all. A clinical trial that is not well designed may delay or even prevent initiation of the trial, can lead to increased difficulty in enrolling patients, may make it more difficult to obtain regulatory approval for the product candidate on the basis of the study results, or, even if a product candidate is approved, could make it more difficult to commercialize the product

successfully or obtain reimbursement from third party payors. Additionally, a trial that is not well-designed could be inefficient or more expensive than it otherwise would have been, or we may incorrectly estimate the costs to implement the clinical trial, which could lead to a shortfall in funding.

We are subject to multiple manufacturing risks, any of which could substantially increase our costs and limit supply of our product candidates.

The process of manufacturing biologics, including our product candidates, is complex and subject to several risks, including:

- product loss during the manufacturing process, including loss caused by contamination, equipment failure or improper installation or operation of equipment, or vendor or operator error. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our products or in the manufacturing facilities in which our products are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination;
- the manufacturing facilities in which our products are made could be adversely affected by equipment failures, labor and raw material shortages, natural disasters, power failures and numerous other factors; and
- any adverse developments affecting manufacturing operations for our products may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls, or other interruptions in the supply of our products. We may also have to take inventory write-offs and incur other charges and expenses for products that fail to meet specifications, undertake costly remediation efforts or seek more costly manufacturing alternatives.

The regulatory review processes of the FDA and comparable foreign regulatory authorities are lengthy, time consuming and inherently unpredictable. Our inability to obtain regulatory approval for our product candidates would substantially harm our business.

The time required to obtain approval by the FDA and comparable foreign regulatory authorities is difficult to predict but typically takes many years following the commencement of preclinical studies and clinical trials and depends upon numerous factors. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval vary among jurisdictions. We have not obtained regulatory approval for any product candidate and it is possible that none of our existing product candidates or any future product candidates will ever obtain regulatory approval.

Our product candidates could fail to receive approval from the FDA or comparable foreign regulatory authorities for many reasons, including:

- disagreement with the design or implementation of our clinical trials, including the endpoints used to assess effectiveness and/or safety;
- failure to demonstrate that a product candidate is safe and effective for its proposed indication;
- failure of clinical trials' endpoints to meet the level of statistical significance required for approval;
- failure to demonstrate that a product candidate's benefits outweigh its risks;
- disagreement with our interpretation of data from preclinical studies or clinical trials;
- the insufficiency of data collected from clinical trials of our product candidates to support a BLA or other submission or to obtain regulatory approval; or
- changes in the approval policies or regulations that render our preclinical and clinical data insufficient for approval.

The FDA or a comparable foreign regulatory authority may require more information, including additional preclinical or clinical data to support approval, which may delay or prevent approval and our commercialization plans, or we may decide to abandon the development program. If we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Regulatory authorities' assessment of the data and results required to demonstrate safety and efficacy can change over time and can be affected by many factors, such as the emergence of new information, including on other products, changing policies and agency funding, staffing and leadership.

Even if our product candidates receive regulatory approval, they may still face future development and regulatory difficulties.

Even if we obtain regulatory approval for a product candidate, it will be subject to ongoing regulation by the FDA and comparable foreign, state and local regulatory authorities, including requirements governing the manufacture, quality control, further development, labeling, packaging, tracking, storage, distribution, safety surveillance, import, export, advertising, promotion, recordkeeping and reporting of safety and other post-market information. The FDA and other applicable foreign regulatory authorities continue to closely monitor the safety profile of any product even after approval. If we receive an approval, we will be required to submit periodic reports to the FDA and notify it of adverse events of which we become aware. If the FDA or other applicable foreign regulatory authorities become aware of new safety information after approval of any of our product candidates, they may, among other measures, require labeling changes or establishment of a REMS or similar strategy, impose significant restrictions on a product's indicated uses or marketing, or impose ongoing requirements for potentially costly post-approval studies or post-market surveillance.

In addition, manufacturers of drug products and their facilities are subject to periodic inspections by the FDA and other regulatory authorities for compliance with cGMP. If we or a regulatory agency discover previously unknown problems with a product, such as adverse events, or problems with the facility where the product is manufactured, a regulatory agency may impose restrictions on that product, the manufacturing facility or us, including requiring recall or withdrawal of the product from the market or suspension of manufacturing. Our advertising and promotion of any product candidate that obtains approval for marketing also will be subject to ongoing scrutiny by the FDA and other regulatory authorities in the United States and applicable international jurisdictions.

If we or the manufacturing facilities for our product candidates fail to comply with applicable regulatory requirements, a regulatory agency may:

- issue warning letters or untitled letters;
- conduct inspections, audits, inquiries, or investigations of us or our facilities;
- mandate modifications to promotional materials or require us to provide corrective information to healthcare practitioners;
- impose a consent decree, which can include various fines, reimbursements for inspection costs, required due dates for specific actions and penalties for noncompliance;
- seek an injunction or impose civil or criminal penalties or monetary fines;
- suspend or withdraw regulatory approval;
- suspend any ongoing clinical trials;
- refuse to approve pending applications or supplements to applications;
- suspend or impose restrictions on operations, including costly new manufacturing requirements; or
- seize or detain products, refuse to permit the import or export of products, or require us to initiate a product recall.

The occurrence of any event or penalty described above may inhibit our ability to commercialize our products and generate revenue.

Advertising and promotion of any product candidate that obtains approval in the United States will be subject to ongoing scrutiny by the FDA. Violations of applicable requirements, including promotion of our products for unapproved, or off-label, uses, may be subject to enforcement letters, inquiries and investigations, as well as civil and criminal sanctions. Additionally, comparable foreign regulatory authorities may scrutinize advertising and promotion of any product candidate that obtains approval in their respective jurisdictions.

In the United States, engaging in the impermissible promotion of our products for off-label uses can also subject us to false claims litigation under federal and state statutes, which can lead to administrative, civil and criminal penalties, damages, monetary fines, disgorgement, individual imprisonment, exclusion from participation in Medicare, Medicaid and other federal healthcare programs, curtailment or restructuring of our operations and agreements that materially restrict the manner in which a company promotes or distributes drug products. These false claims statutes include, but are not limited to, the federal civil False Claims Act, which imposes civil penalties against individuals and entities for, among other things, knowingly presenting or causing to be presented, false or fraudulent claims for payment of government funds. Actions under the False Claims Act can be brought by the Attorney General or as a qui tam action by private individuals in the name of the government, who may receive a share of any judgments or settlement amounts. These False Claims Act lawsuits against pharmaceutical and biopharmaceutical companies have increased significantly in number and scope, leading to substantial civil settlements regarding certain sales practices, including promoting off-label uses. This growth in litigation has increased the risk that a pharmaceutical or biopharmaceutical company will have to defend a false claim action, pay settlement fines or restitution, agree to comply with burdensome reporting and compliance obligations in exchange for not being excluded from Medicare, Medicaid and other federal and state healthcare programs. If we do not lawfully promote our approved products, we may become subject to such litigation, which would have a material adverse effect on our business, financial condition and results of operations. For a more comprehensive discussion of the False Claims Act, see “Business–Government Regulation and Product Approval–Federal and State Fraud and Abuse and Data Privacy and Security Laws and Regulations.” Promotion prior to marketing approval or for off-label uses may also give rise to criminal prosecution in the European Union.

The FDA’s and other applicable government agencies’ policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval, and thus the sale and promotion, of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

One of the indications we are pursuing for our lead product candidate VX15 is for the treatment of Huntington’s disease, and because there are no approved preventative treatments for Huntington’s disease, the development pathway is uncertain, which may make development more unpredictable or difficult than we currently expect.

We are studying VX15 as a preventative treatment for Huntington’s disease, which is a neurodegenerative genetic disorder that typically manifests in mid-adult life. The development pathway for Huntington’s disease is relatively uncertain, which we believe is in part because there are currently no approved products for the preventative treatment of Huntington’s disease. Moreover, because we are seeking to develop a treatment for the prevention of prodromal Huntington’s disease, we are focusing on a target population of individuals who have not yet reached the point of clinical diagnosis or those who have been diagnosed relatively recently. This may make it more difficult to document that our drug is effective in preventing Huntington’s disease because there are no clinical endpoints for preventative therapy that the FDA has accepted. We intend to employ biomarkers as endpoints in our Phase 2 clinical trial, and we believe that the FDA will accept these biomarkers for purposes of

our Phase 2 clinical trial. If we are to rely on these or other biomarkers for any future pivotal study, however, we anticipate needing to establish that these biomarkers, or others, have a clinically meaningful cognitive or behavioral effect on patients, and there is no certainty that we will be able to do so.

Our failure to obtain regulatory approval in international jurisdictions would prevent us from marketing our product candidates in those jurisdictions.

In order to market and sell our products in other jurisdictions, we must obtain separate marketing approvals for those jurisdictions and comply with their numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The regulatory approval process outside the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many countries outside the United States, we must secure product reimbursement approvals before regulatory authorities will approve the product for sale in that country. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. Further, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not ensure approval in any other country, while a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others. Also, if regulatory approval for any of our product candidates is granted, it may be later withdrawn. If we fail to comply with the regulatory requirements in international markets and do not receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed and our business will be adversely affected. We may not obtain foreign regulatory approvals on a timely basis, if at all. Our failure to obtain approval of any of our product candidates by regulatory authorities in countries outside of the United States may significantly diminish the commercial prospects of that product candidate and our business prospects could decline.

Our product candidates may not achieve adequate market acceptance among physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

Even if our product candidates receive regulatory approval, they may not gain adequate market acceptance among physicians, patients, healthcare payors and others in the medical community. Our commercial success also depends on coverage and adequate reimbursement and pricing of our product candidates by third-party payors, including government payors, which may be difficult or time-consuming to obtain, may be limited in scope and may not be obtained in all jurisdictions in which we may seek to market our products. The degree of market acceptance of any of our approved product candidates will depend on a number of factors, including:

- the efficacy and safety profile as demonstrated in clinical trials;
- the timing of market introduction of the product candidate as well as competitive products;
- the clinical indications for which the product candidate is approved;
- acceptance of the product candidate as a safe and effective treatment by physicians, clinics and patients;
- the potential and perceived advantages of product candidates over alternative treatments;
- the cost of treatment in relation to alternative treatments;
- the availability of coverage and adequate reimbursement and pricing by third-party payors, including government payors, and the willingness of patients to pay out-of-pocket in the absence of coverage by third-party payors;
- relative convenience and ease of administration;
- the frequency and severity of adverse events;
- the strength and effectiveness of our sales and marketing efforts; and
- any unfavorable publicity relating to the product candidate.

Our competitors may develop and market products or services that are less expensive, more effective, or safer, or that reach the market sooner, than our product candidates, which may diminish or eliminate the commercial success of any products or services we commercialize.

The biotechnology industry is intensely competitive and subject to rapid and significant technological change. Our current product candidates may face competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide that have marketed drugs or are advancing product candidates to treat the same indications that we plan to treat or, in the case of competition or potential competition with our ActivMAb antibody discovery platform, that have marketed antibody discovery platforms or are advancing approaches that are an alternative to our ActivMAb platform. Many of our competitors have significantly greater financial, technical and human resources. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

Our competitors may obtain FDA or other regulatory approval of their product candidates more rapidly than we may or may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our product candidates or platform technologies. Our competitors may also develop drugs or antibody discovery platforms that are more effective, more convenient, more widely used or less costly or, in the case of drugs, have a better safety profile than our platforms or product candidates. These competitors may also be more successful than us in manufacturing and marketing their products, and have significantly greater financial resources and expertise in research and development.

Our competitors will also compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

We believe that our ability to successfully compete will depend on, among other things:

- the efficacy and safety profile of our product candidates, including relative to marketed products and product candidates in development by third parties;
- the success, or perceived success, of our platform technologies;
- the time it takes for our product candidates to complete clinical development and receive marketing approval;
- the ability to commercialize any of our product candidates that receive regulatory approval;
- the price of our drug products, including in comparison to branded or generic competitors;
- the price of our services, including with respect to the terms on which we are willing to collaborate, including in comparison to other antibody discovery approaches or platform technologies;
- whether coverage and adequate levels of reimbursement are available from private and governmental payors, including Medicare;
- the ability to establish, maintain and protect intellectual property rights related to our product candidates or platform technologies;
- the ability to manufacture commercial quantities of any of our product candidates that receive regulatory approval; and
- acceptance of any of our product candidates that receive regulatory approval by physicians and other healthcare providers or by patients.

If we do not compete successfully, we may not generate or derive sufficient revenue from any product candidate for which we obtain marketing approval and may not become or remain profitable.

We may not be able to achieve the benefits or synergistic effects of VX15 in combination with other immunotherapies that we have observed in preclinical studies of VX15 in combination with the anti-CTLA-4 antibody ipilimumab.

Based on our preclinical research, we believe that the combination of VX15 with immunotherapeutic drugs, such as immune checkpoint inhibitors, could prove beneficial because VX15 promotes infiltration of immune cells into a tumor. As such, we believe VX15 could enhance the activity of other agents that increases peripheral immune responses. Most of the preclinical studies with respect to the combination of VX15 with immunotherapies have involved the anti-CTLA-4 antibody ipilimumab. The results of these studies showed that VX15 in combination with the CTLA-4 checkpoint inhibitor can greatly enhance the immune response to tumors by amplifying the benefits of this checkpoint inhibitor. However, while we have performed research with respect to VX15 in combination with other immunotherapies, it is not clear that such combinations will have the same benefits or synergies demonstrated in animal models by the preclinical studies of VX15 in combination with anti-CTLA-4 antibodies. Accordingly, we may not be able generate adequate data to demonstrate the efficacy and safety in clinical trials of VX15 in combination with other immunotherapies, which could result in significant setbacks in clinical trials and changes to our development plans. If future clinical trials do not produce favorable results, our ability to achieve regulatory approval for VX15 may be adversely impacted.

As a result of our development strategy, future arrangements with potential collaborators, or other reasons, we may need to develop a second antibody to continue to develop our SEMA4D antibody platform for multiple indications.

Our SEMA4D antibody platform is the application of our extensive knowledge of SEMA4D biology to develop VX15 for the treatment of various indications. We are currently focused on developing VX15 for the treatment of NSCLC and Huntington's disease. Additionally, in coordination with us, one investigator is studying VX15 in osteosarcoma and another is expected to study VX15 in melanoma, and in the future we intend to pursue other indications for VX15. However, as a result of our development strategy, or for commercial reasons, including those that could arise from collaborative arrangements with third parties, we may determine that we need to develop a second anti-SEMA4D antibody to pursue one or more indications, including indications that we are currently pursuing or plan to pursue. While we have identified another potential antibody as part of our SEMA4D antibody platform, we have done limited preclinical research with it, and it may require a significant amount of time and cost to develop that antibody to the same stage of development where VX15 is today. Even if we make the additional investment in this or another antibody, we may not be able to develop another antibody as part of our SEMA4D antibody platform.

We may need to develop or obtain additional capabilities, or enter into arrangements with third parties, to commercialize any product candidates that obtain regulatory approval, and we may encounter unexpected costs or difficulties in doing so.

We will need to obtain additional capabilities and effectively manage our operations and facilities to successfully pursue and complete future research, development and commercialization efforts. Currently, we have no experience in preparing applications for marketing approval, commercial-scale manufacturing, managing of large-scale information technology systems or managing a large-scale distribution system. We will need to enter into arrangements with third parties or add personnel and expand our capabilities, which may strain our existing managerial, operational, regulatory compliance, financial and other resources.

We plan to conduct process development activities to support late stage development and commercialization activities and seek approval of our product candidates. Should we not receive timely approval of our production process, our ability to produce the immunotherapy products following regulatory approval for sale could be delayed, which would further delay the period of time when we would be able to generate revenues from the sale of such products, if we are even able to generate revenues at all.

We do not currently have any sales, marketing or distribution experience or infrastructure and may rely on alliances with others possessing such capabilities to commercialize our products successfully.

We intend to market our product candidates, if and when such product candidates are approved by the FDA or comparable foreign regulatory authorities, either directly or through other alliances and distribution arrangements with third parties. There can be no assurance that we will be able to enter into third-party marketing or distribution arrangements on advantageous terms or at all. To the extent that we do enter into such arrangements, we will be dependent on our marketing and distribution partners. In entering into third-party marketing or distribution arrangements, we expect to incur significant additional expense. If we are unable to enter into such arrangements on acceptable terms or at all, we may not be able to successfully commercialize any of our product candidates that receive regulatory approval. Depending on the nature of the third-party relationship, we may have little control over such third parties, and any of these third parties may fail to devote the necessary resources and attention to sell, market and distribute our products effectively. If we are not successful in commercializing our product candidates, either on our own or through collaborations with one or more third parties, our future product revenue will suffer and we may incur significant additional losses.

Even if we commercialize a product candidate, it or any other product candidates that we develop may become subject to unfavorable pricing regulations, third-party coverage or reimbursement practices or healthcare reform initiatives, which could harm our business.

Our ability to commercialize any product candidates successfully will depend in part on the extent to which coverage and adequate reimbursement for our product candidates will be available from government health administration authorities, private health insurers and other organizations. The laws that govern marketing approvals, pricing and reimbursement for new drug products vary widely from country to country. We cannot be sure that coverage and reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we may not successfully commercialize any product candidate for which we obtain marketing approval.

If we successfully commercialize any of our products, we may participate in the Medicaid Drug Rebate program. Participation is required for federal funds to be available for our covered outpatient drugs under Medicaid and, if applicable, Medicare Part B. Under the Medicaid Drug Rebate Program, we would be required to pay a rebate to each state Medicaid program for our covered outpatient drugs that are dispensed to Medicaid beneficiaries and paid for by a state Medicaid program as a condition of having federal funds being made available to the states for our drugs under Medicaid and, if applicable, Part B of the Medicare program.

Federal law requires that any company that participates in the Medicaid Drug Rebate Program also participate in the Public Health Service’s 340B drug pricing program in order for federal funds to be available for the manufacturer’s drugs under Medicaid and Medicare Part B. The 340B drug pricing program requires participating manufacturers to agree to charge statutorily-defined covered entities no more than the 340B “ceiling price” for the manufacturer’s covered outpatient drugs. These 340B covered entities include a variety of community health clinics and other entities that receive health services grants from the Public Health Service, as well as hospitals that serve a disproportionate share of low-income patients.

In addition, in order to be eligible to have its products paid for with federal funds under the Medicaid and Medicare Part B programs and purchased by certain federal agencies and grantees, a manufacturer also must participate in the U.S. Department of Veterans Affairs, or VA, Federal Supply Schedule, or FSS, pricing program. Under this program, the manufacturer is obligated to make its innovator and single source products available for procurement on an FSS contract and charge a price to four federal agencies, U.S. Department of Defense, or DoD, Public Health Service and U.S. Coast Guard, that is no higher than the statutory Federal Ceiling Price. Moreover, pursuant to regulations issued by the DoD Defense Health Agency to implement

Section 703 of the National Defense Authorization Act for Fiscal Year 2008, manufacturers are required to provide rebates on utilization of their innovator and single source products that are dispensed to TRICARE beneficiaries by TRICARE network retail pharmacies. The requirements under the 340B, FSS, and TRICARE programs could reduce the revenue we may generate from any products that are commercialized in the future and could adversely affect our business and operating results.

Current and future legislation may increase the difficulty and cost for commercialization of our product candidates and affect the prices we or our partners may obtain.

The United States and many foreign jurisdictions have enacted or proposed legislative and regulatory changes affecting the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any product candidate for which we obtain marketing approval.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or Medicare Modernization Act, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly by establishing Medicare Part D and introduced a new reimbursement methodology based on average sales prices for physician-administered drugs under Medicare Part B. In addition, this legislation provided authority for limiting the number of drugs that Medicare will cover in any therapeutic class under the new Medicare Part D program. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and reimbursement rate that we receive for any of our approved products. While the Medicare Modernization Act applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the Medicare Modernization Act may result in a similar reduction in payments from private payors.

In March 2010, Congress enacted the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively the Affordable Care Act, which includes measures that have significantly changed the way healthcare is financed by both governmental and private insurers. Some of the provisions of the Affordable Care Act have yet to be fully implemented, and there have been judicial and congressional challenges to certain aspects of the Affordable Care Act. Since January 2017, President Trump has signed Executive Orders that may affect the implementation of certain provisions of the Affordable Care Act or otherwise affect some of the federal requirements governing health insurance. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the Affordable Care Act have been signed into law. The Tax Act includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the “individual mandate.” Additionally, on January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018, referred to as the Bipartisan Budget Act of 2018, that delayed the implementation of certain Affordable Care Act-mandated fees, including the so-called “Cadillac” tax on certain high cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. The Bipartisan Budget Act of 2018 also increased the required manufacturer discount to 70% off the negotiated price for Medicare Part D beneficiaries in the coverage gap, commonly referred to as the “donut hole,” beginning in 2019. Additional legislative changes to and regulatory changes under the Affordable Care Act remain possible. We continue to evaluate the effect that the Affordable Care Act, as currently enacted or as it may be amended in the future, has on our business.

In addition, other legislative changes have been proposed and adopted since the Affordable Care Act was enacted. For example, in August 2011, then-President Obama signed into law the Budget Control Act of 2011, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend to Congress

proposals in spending reductions. The Joint Select Committee on Deficit Reduction did not achieve a targeted deficit reduction, which triggered the legislation's automatic reduction to several government programs. In concert with subsequent legislation, this includes aggregate reductions to Medicare payments to providers of, on average, 2% per fiscal year through 2025 unless Congress takes additional action. Recently, there has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. congressional inquiries and proposed bills designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs and reform government program reimbursement methodologies for drugs. At the state level, legislatures are increasingly passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure, and transparency measures.

We expect that the healthcare reform measures that have been adopted and may be adopted in the future may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved product and could seriously harm our future revenues. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our products.

If we are able to successfully commercialize any of our products and if we participate in the Medicaid drug rebate program or other governmental pricing programs, failure to comply with reporting and payment obligations under these programs could result in additional reimbursement requirements, penalties, sanctions and fines which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

The Medicaid Drug Rebate Program and other governmental pricing programs require participating manufacturers to report pricing data to various government agencies. Pricing calculations vary among products and programs and include average manufacturer price and best price for the Medicaid Drug Rebate Program, average sales price for certain categories of drugs that are paid under Part B of the Medicare program, and non-federal average manufacturer price for the VA FSS pricing program. If we successfully commercialize any of our products and participate in such governmental pricing programs, we will be liable for errors associated with our submission of pricing data. That liability could be significant. For example, if we are found to have knowingly submitted false average manufacturer price, average sales price, best price, or non-federal average manufacturer price information to the government, or fail to timely submit such information, we may be liable for significant civil monetary penalties. The foregoing also could be grounds for other sanctions, such as termination from the Medicaid Drug Rebate Program.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of our product candidates.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human trials and may face greater risk if we commercialize any products that we develop. Product liability claims may be brought against us by subjects enrolled in our trials, patients, healthcare providers or others using, administering or selling our products. If we cannot successfully defend ourselves against such claims, we could incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for our products;
- termination of clinical trial sites or entire trial programs;
- injury to our reputation and significant negative media attention;
- withdrawal of trial participants;

- significant costs to defend the related litigation;
- substantial monetary awards to trial subjects or patients;
- diversion of management and scientific resources from our business operations; and
- the inability to commercialize any products that we may develop.

While we currently hold trial liability insurance coverage consistent with industry standards, the amount of coverage may not adequately cover all liabilities that we may incur. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise. We intend to expand our insurance coverage for products to include the sale of commercial products if we obtain marketing approval for our product candidates, but we may be unable to obtain commercially reasonable product liability insurance. A successful product liability claim or series of claims brought against us, particularly if judgments exceed our insurance coverage, could decrease our cash and adversely affect our business and financial condition.

Our relationships with customers and third-party payors will be subject to applicable anti-kickback, fraud and abuse, transparency and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens and diminished profits and future earnings.

Healthcare providers, physicians and third-party payors play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include, but are not limited to, the following:

- the federal Anti-Kickback Statute prohibits persons from, among other things, knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, the referral of an individual for the furnishing or arranging for the furnishing, or the purchase, lease or order, or arranging for or recommending purchase, lease or order, or any good or service for which payment may be made under a federal healthcare program such as Medicare and Medicaid;
- the federal False Claims Act imposes criminal and civil penalties, including through civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- the federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and its implementing regulations, or HIPAA, imposes criminal liability for knowingly and willfully executing a scheme to defraud any healthcare benefit program, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a health care offense, or knowingly and willfully making false statements relating to healthcare matters;
- HIPAA also imposes obligations on certain covered entity health care providers, health plans and health care clearinghouses as well as their business associates that perform certain services involving the use or disclosure of individually identifiable health information, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- the federal Physician Payments Sunshine Act, implemented as the Open Payments program, requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare and Medicaid Services within the U.S. Department of

Health and Human Services information related to payments or other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by physicians(as defined above) and their immediate family members; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to items or services reimbursed by non-governmental third-party payors, including private insurers; state and foreign laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers in those jurisdictions; state and foreign laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; some states also prohibit certain marketing-related activities including the provision of gifts, meals, or other items to certain health care providers, and others restrict the ability of manufacturers to offer co-pay support to patients for certain prescription drugs; other states and cities require identification or licensing of sales representatives; and state and foreign laws that govern the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. Although compliance programs can help mitigate the risk of investigations and prosecution for violations of these laws, the risks cannot be eliminated entirely. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. Defending against actions or investigations for violations of these laws and regulations, even if ultimately successful, will incur significant legal expenses and divert management's attention from the operation of our business.

Our employees may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have a material adverse effect on our business.

We are exposed to the risk of employee fraud or other misconduct. Misconduct by employees could include intentional failures to comply with FDA regulations or similar regulations of comparable foreign regulatory authorities, provide accurate information to the FDA or comparable foreign regulatory authorities, comply with manufacturing standards we have established, comply with federal and state healthcare fraud and abuse laws and regulations and similar laws and regulations established and enforced by comparable foreign regulatory authorities, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. We have adopted a code of business conduct and ethics, which will be effective as of the completion of this offering, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could

have a significant impact on our business and results of operations, including the imposition of significant fines or other sanctions.

We depend on key personnel for our continued operations and future success and a loss of certain key personnel could significantly hinder our ability to move forward with our business plan.

To succeed, we must recruit, retain, manage and motivate qualified clinical, scientific, technical and management personnel and we face significant competition for experienced personnel. If we do not succeed in attracting and retaining qualified personnel, particularly at the management level, it could adversely affect our ability to execute our business plan and harm our operating results. In particular, we are highly dependent on Dr. Maurice Zauderer, our founder and Chief Executive Officer. The loss of Dr. Zauderer, or one or more of our other executive officers, could be detrimental to us if we cannot recruit suitable replacements in a timely manner. The competition for qualified personnel in the pharmaceutical field is intense and as a result, we may be unable to continue to attract and retain qualified personnel necessary for the development of our business or to recruit suitable replacement personnel.

Many of the other biopharmaceutical companies that we compete against for qualified personnel have greater financial and other resources and different risk profiles than we do. They also may provide more diverse opportunities and better chances for career advancement. If we are unable to continue to attract and retain high-quality personnel, the rate and success at which we can discover and develop product candidates and our business will be limited.

Risks Related to our Dependence on Third Parties

We rely on third parties to conduct our preclinical studies and clinical trials. If these third parties do not successfully carry out their contractual duties, comply with budgets and other financial obligations or meet expected deadlines, we may not be able to obtain regulatory approval for or commercialize our product candidates in a timely or cost-effective manner.

We rely, and expect to continue to rely, on third-party CROs to conduct preclinical and clinical trials. Because we rely on third parties to conduct clinical trials, we must rely on the efforts of others and cannot always control or accurately predict the timing of such trials, the costs associated with such trials or the procedures that are followed for such trials. We do not anticipate significantly increasing our personnel in the foreseeable future and therefore, expect to continue to rely on third parties to conduct all of our future clinical trials. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they do not carry out the trials in accordance with budgeted amounts, if the quality or accuracy of the clinical data they obtain is compromised due to their failure to adhere to our clinical protocols or for other reasons, or if they fail to maintain compliance with applicable government regulations and standards, our clinical trials may be extended, delayed or terminated or may become prohibitively expensive, we may be subject to potential enforcement by the FDA and analogous regulatory authorities in international jurisdictions for their failure to comply with applicable laws and regulations, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates.

If our agreements with our current or future CROs are terminated or otherwise adversely affected, our drug development efforts could be delayed.

We rely on, and expect to develop additional relationships with, third-party vendors and CROs for preclinical studies and clinical trials related to our drug development efforts. Switching or adding additional CROs involves additional cost and requires management time and focus. Our CROs have the right to terminate their agreements with us in the event of an uncured material breach. Some of our CROs may have other rights to terminate their respective agreements with us, including for reasons such as: if it is determined that the safety of subjects participating in our clinical trials warrants such termination; if we make an assignment for the benefit of

our creditors; or if we are liquidated. Identifying, qualifying and managing performance of third-party service providers can be difficult, time consuming and cause delays in our development programs. In addition, there is a natural transition period when a new CRO commences work and the new CRO may not provide the same type or level of services as the original provider. If any of our relationships with our third-party CROs terminate, we may not be able to enter into arrangements with alternative CROs or to do so on commercially reasonable terms.

We depend on third-party manufacturers for the manufacture of drug substance and drug product for clinical trials as well as on third parties for our supply chain. Any problems we experience with any of these third parties could delay the manufacturing of our product candidates, which could harm our results of operations.

We do not currently operate manufacturing facilities for clinical or commercial production of our product candidates. We do not have and we do not currently plan to acquire or develop the facilities or capabilities to manufacture bulk drug substance or finish-fill drug product for use in human clinical trials or for potential commercialization.

Catalent Pharma Solutions, or Catalent, manufactures VX15 for use in clinical trials according to the terms of a manufacturing agreement with us, and we use other third parties for other aspects of the manufacturing process. We have not contracted with alternate suppliers in the event the organizations we currently utilize, including Catalent, are unable to scale production, or if we otherwise experience any problems with them. If we encounter problems with any of them, including if they are unable to scale production or have problems at their facilities, and we are unable to arrange for alternative third-party manufacturing sources, or to do so on commercially reasonable terms or in a timely manner, we may be delayed in the development of our product candidates.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured product candidates or products ourselves, including reliance on the third party for regulatory compliance and quality assurance, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control (including a failure to manufacture our product candidates or any products we may eventually commercialize in accordance with our specifications) and the possibility of termination or nonrenewal of the agreement by the third party, based on its own business priorities, at a time that is costly or damaging to us.

We may not succeed in establishing and maintaining additional collaborations, which could adversely affect our ability to develop and commercialize product candidates.

In addition to our current research and development collaborations, a part of our strategy is to enter into additional research and development collaborations in the future, including collaborations with pharmaceutical companies. We face significant competition in seeking appropriate development partners and the negotiation process is time-consuming and complex. Moreover, we may not succeed in our efforts to establish a collaboration or other alternative arrangements for any of our other existing or future product candidates and programs because our research and development pipeline may be insufficient, our product candidates and programs may be deemed to be at too early a stage of development for collaborative effort and third parties may not view our product candidates and programs as having the requisite potential to demonstrate safety and efficacy. Even if we are successful in our efforts to establish new collaborations, the terms that we agree upon may not be favorable to us and we may not be able to maintain such collaborations if, for example, development or approval of a product candidate is delayed or sales of an approved product candidate are disappointing.

Moreover, if we fail to establish and maintain additional collaborations related to our product candidates:

- the development of certain of our current or future product candidates may be terminated or delayed;
- our cash expenditures related to development of certain of our current or future product candidates would increase significantly and we may need to seek additional financing;

- we may be required to hire additional employees or otherwise develop expertise, such as sales and marketing expertise, for which we have not budgeted; and
- we will bear all of the risk related to the development of any such product candidates.

Collaborations may require us to relinquish important rights to and control over the development of our product candidates or otherwise be subject to unfavorable terms.

If we sign a collaboration agreement, license agreement or similar agreement with a collaborator to develop a product candidate, that collaborator may have certain rights to further the development of the product candidate, which could include the design and conduct of clinical trials, the preparation and filing of documents necessary to obtain regulatory approval, and the manufacturing, sale, marketing and other commercialization of the product if it obtains regulatory approval. For example, under the terms of our arrangement with Biocon Limited, or Biocon, Biocon has the right to control development of BVX20. Dependence on a corporate collaborator subjects us to a number of risks, including:

- we may not be able to control the amount and timing of resources that our collaborators devote to the development or commercialization of our product candidates;
- collaborators may delay clinical trials, provide insufficient funding, terminate a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new version of a product candidate for clinical testing;
- collaborators may not pursue further development and commercialization of products resulting from the strategic partnering arrangement or may elect to discontinue research and development programs;
- collaborators may not commit adequate resources to the marketing and distribution of our product candidates, limiting our potential revenues from these products;
- disputes may arise between us and our collaborators that result in the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management's attention and consumes resources;
- collaborators may experience financial difficulties;
- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in a manner that could jeopardize or invalidate our proprietary information or expose us to potential litigation;
- business combinations or significant changes in a collaborator's business strategy may also adversely affect a collaborator's willingness or ability to complete its obligations under any arrangement;
- collaborators could decide to move forward with a competing product candidate developed either independently or in collaboration with others, including our competitors; and
- collaborators could terminate the arrangement or allow it to expire, which would delay the development and may increase the cost of developing our product candidates.

Risks Related to Intellectual Property

If we are unable to obtain or protect intellectual property rights, we may not be able to compete effectively in our market.

Our success depends in significant part on our and our licensors', licensees' or collaborators' ability to establish, maintain and protect patents and other intellectual property rights and operate without infringing the intellectual property rights of others. We have filed numerous patent applications both in the United States and in foreign jurisdictions to obtain patent rights to our inventions. We have also licensed from third parties rights to patents. Some of these licenses give us the right to prepare, file and prosecute patent applications and maintain and enforce patents we licensed.

The patent prosecution process is expensive and time-consuming, and we and our current or future licensors, licensees or collaborators may not be able to prepare, file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we or our licensors, licensees or collaborators will fail to identify patentable aspects of inventions made in the course of development and commercialization activities before it is too late to obtain patent protection on them. Moreover, in some circumstances, we may not have the right to control the preparation, filing, prosecution, and maintenance of patent applications and patents encompassing technology that we license from, or license to, third parties and in these circumstances are reliant on our licensors, licensees or collaborators. Therefore, these patents and patent applications may not at all times be prosecuted and enforced in a manner consistent with the best interests of our business. If our current or future licensors, licensees or collaborators fail to establish, maintain or protect such patents and other intellectual property rights, such rights may be reduced or eliminated. If our licensors, licensees or collaborators are not fully cooperative or disagree with us as to the prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our and our current or future licensors', licensees' or collaborators' patent rights are highly uncertain. Our and our licensors', licensees' or collaborators' pending and future patent applications may not result in patents being issued that protect our technology or products, in whole or in part, or that effectively prevent others from commercializing competitive technologies and products. The patent examination process may require us or our licensors, licensees or collaborators to narrow the scope of the claims of our or our licensors', licensees' or collaborators' pending and future patent applications, which may limit the scope of patent protection that may be obtained. Our and our licensors', licensees' or collaborators' patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless and until a patent issues from such applications, and then such patent rights can only be enforced to the extent the issued claims cover the infringing technology.

Additionally, in some countries, applicants are not able to protect methods of treating human beings or medical treatment processes. Countries such as India and elsewhere have enacted various rules and laws precluding issuance of patent claims covering methods a doctor may practice on a human being or any other animal to treat a disease or condition. Further, many countries have enacted laws and regulatory regimes that do not provide patent protection for methods of use of known compounds. In such countries and jurisdictions, only product claims may be obtained, and only when those products are new or novel. The lack of such patent protection may have a materially adverse effect on our business and financial condition.

Furthermore, given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after those candidates receive regulatory approval and are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours. We expect to seek patent term extensions where these are available upon regulatory approval in those countries where we are prosecuting patents. This includes in the United States under the Drug Price Competition and Patent Term Restoration Act of 1984, which permits a patent term extension of up to five years beyond the expiration of the patent, but no more than fourteen years beyond the date of product approval, for a product that represents the first permitted commercial use of the active ingredient. However, the applicable authorities, including the United States Patent and Trademark Office, or the USPTO, and the FDA in the United States, and equivalent regulatory authorities in other countries, may not agree with our assessment of whether such extensions are available, and may refuse to grant extensions to our patents, or may grant more limited extensions than we request. If this occurs, our competitors may be able to reference our clinical and preclinical data and launch their products earlier than might otherwise be possible.

Finally, our patent portfolio encompasses both issued patents and pending patent applications around the world in various jurisdictions, and the pending patent applications or issued patents encompassing each of the

different technology areas may be assigned different relative and future values, either based on commercial relevance, patent position strength, patent coverage, claim scope, or any other variables associated with intellectual property. That is, some aspects of our patent portfolio, encompassing various aspects of our product candidates and platform technology, may be more valuable than other aspects of our patent portfolio. For example, the patents and patent applications encompassing the VX15 technology may be of particular value to our company because they encompass specific product candidates and medical indications critical to the future of our business. Inability to obtain patents encompassing these critical technologies could more adversely impact our business than inability to obtain patents encompassing other aspects of our business. Thus, adverse events experienced within these specific patent portfolios could critically hamper our ability to commercialize and conduct business in these key technology areas.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting, enforcing and defending patents on product candidates and laboratory methods or platform technology in all countries throughout the world would be prohibitively expensive, and our or our licensors' or collaborators' intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, as noted above, the laws of some foreign countries do not protect intellectual property rights to the same extent as laws in the United States. Consequently, we and our licensors or collaborators may not be able to prevent third parties from practicing our and our licensors' or collaborators' inventions in all countries outside the United States, or from selling or importing products made using our and our licensors' or collaborators' inventions in and into the United States or other jurisdictions. Competitors may use our and our licensors' or collaborators' technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we and our licensors or collaborators have patent protection, but where enforcement laws are not as protective as that in the United States. These products may compete with our product candidates and our and our licensors' or collaborators' patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biopharmaceuticals or laboratory platform technology, which could make it difficult for us and our licensors or collaborators to stop the infringement of our and our licensors' or collaborators' patents or stop the marketing of products competing with our and our licensors' or collaborators' commercial efforts generally. Proceedings to enforce our and our licensors' or collaborators' patent rights in foreign jurisdictions requires significant financial resources and can divert our and our licensors' or collaborators' efforts and attention away from other critical aspects of our business, could put our and our licensors' or collaborators' patents at risk of being invalidated or interpreted narrowly, and could place our and our licensors' or collaborators' patents at risk of not issuing. This could in turn provoke third parties to assert claims against us or our licensors or collaborators. We or our licensors or collaborators may not prevail in any lawsuits that we or our licensors or collaborators initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful.

The requirements for patentability may differ in certain countries, particularly developing countries. In India, unlike the United States, there is no link between regulatory approval of a drug and its patent status. Furthermore, generic or biosimilar drug manufacturers or other competitors may challenge the scope, validity or enforceability of our or our licensors' or collaborators' patents, requiring us or our licensors or collaborators to engage in complex, lengthy and costly litigation or other post-grant proceedings. Generic or biosimilar drug manufacturers may develop, seek approval for, and launch, biosimilar versions of our products in many countries without conducting extensive clinical trials. In addition to India, certain countries in Europe and developing countries, including China, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In those countries, we and our licensors or collaborators may have limited remedies if patents are infringed or if we or our licensors or collaborators are compelled to grant a license to a

third party, which could materially diminish the value of those patents. This could limit our potential revenue opportunities. Accordingly, our and our licensors' or collaborators' efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license.

Changes in patent law and legal precedent concerning patents could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

As is the case with other biotechnology and pharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involve technological and legal complexity, and obtaining and enforcing biopharmaceutical patents is costly, time-consuming, and inherently uncertain. The Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our and our licensors' or collaborators' ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our and our licensors' or collaborators' ability to obtain new patents or to enforce existing patents and patents we and our licensors or collaborators may obtain in the future.

Patent legislation could increase the uncertainties and costs surrounding the prosecution of our and our licensors' or collaborators' patent applications and the enforcement or defense of our or our licensors' or collaborators' issued patents. On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law, including changing U.S. patent law to award a patent to the first inventor to file, rather than to the first to invent. These include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. The USPTO developed regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first to file provisions, became effective on March 16, 2013. Accordingly, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our or our licensors' or collaborators' patent applications and the enforcement or defense of our or our licensors' or collaborators' issued patents, all of which could have a material adverse effect on our business and financial condition.

Additionally, the Leahy-Smith Act provides for various post-grant proceedings providing challengers various legal avenues and opportunities to challenge and invalidate any issued patents we may obtain in the United States. Thus, even when claims issue in patents in the United States, they are not invulnerable to attack, modification, and/or cancellation. New proposals continue to be announced in the U.S. Congress that aim to further change these laws, creating instability in both value and strength of U.S. patents, especially in the biotechnology field. Therefore, the Leahy-Smith Act, and any other follow-on laws that may be enacted in the United States represent a substantial risk in the valuation of our patent portfolio. For instance, new legislation has been proposed that attempts to curb patent abuse by non-practicing entities that own patent rights. Such proposed legislation in the United States has included provisions making it substantially more expensive and risky to litigate patent rights in the United States. Should any of these provisions be enacted in the United States that compromise patentees' abilities to enforce their patent rights, substantial uncertainty will surround our ability to enforce our patents in the United States without incurring substantial financial risk.

Obtaining and maintaining our patent rights depends on compliance with various different procedural, document submission, fee payment and other requirements imposed by each individual governmental patent agency, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance and annuity fees are required to be paid to the USPTO and foreign patent agencies at several time periods over the lifetime of any patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process and following patent issuance. While an inadvertent lapse can in some instances be cured by payment of a late fee or by other means in accordance with the applicable rules of those countries, there are situations in which noncompliance can result in permanent abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. These rules governing procedural, documentary, fee payment and other provisions of patent prosecution and maintenance are not uniform and vary substantially from country to country, requiring country-specific patent expertise in each jurisdiction in which patent protection is sought. If we or our licensors or collaborators fail to maintain the patents and patent applications covering our product candidates or laboratory platform technology in one or more legal jurisdictions, our competitors might be able to enter the market in those jurisdictions, which would have a materially adverse effect on our business and financial condition.

We may become involved in lawsuits to protect or enforce our intellectual property rights, which could be expensive, time-consuming, distracting, unpredictable, and unsuccessful, and therefore could have a materially adverse impact on the success of our business and financial condition.

Third parties may infringe our or our licensors' or collaborators' patents, or misappropriate or otherwise violate our or our licensors' or collaborators' intellectual property rights. Licensees or licensors may violate contractual agreements governing the practice of patented inventions. In the future, we or our licensors or collaborators may initiate legal proceedings to enforce or defend our or our licensors' or collaborators' intellectual property rights, to protect our or our licensors' or collaborators' trade secrets or to determine the validity or scope of intellectual property rights we own or control. Also, third parties may initiate legal proceedings against us or our licensors or collaborators to challenge the validity or scope of intellectual property rights we own or control. These legal proceedings can be expensive and time-consuming and many of our or our licensors' or collaborators' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors or collaborators. Accordingly, despite our or our licensors' or collaborators' best efforts, we or our licensors or collaborators may not prevent third parties from infringing upon or misappropriating intellectual property rights we own or control, particularly in countries where the laws may not protect those rights as fully as in the United States, or in countries where enforcement is less robust due to local customs and underdeveloped enforcement protocols. Litigation could result in substantial costs and diversion of management resources, which could harm our business and financial results. In addition, in a patent infringement proceeding, a court may decide that a patent owned by or licensed to us is invalid or unenforceable, in part or in whole, or may refuse to stop the other party from using the technology at issue on the grounds that our or our licensors' or collaborators' patent claims do not encompass the putatively infringing technology in question. An adverse result in any litigation proceeding could place one or more of our or our licensors' or collaborators' patents at risk of being invalidated, held unenforceable or interpreted narrowly.

Third-party pre-issuance submission of prior art to the USPTO, or opposition, derivation, reexamination, post-grant review, inter partes review or interference proceedings, or other pre-issuance or post-grant proceedings in the United States or other jurisdictions instigated by third parties or brought by us or our licensors or collaborators may be necessary. For applications and granted patents not subject to the first to file provisions of the Leahy-Smith Act, interference proceedings may be initiated by the USPTO to determine the priority of inventions with respect to our or our licensors' or collaborators' patents or patent applications. An unfavorable

outcome could require us or our licensors or collaborators to cease using the related technology and commercializing our product candidates, or to attempt to obtain a license to the disputed technology from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license on commercially reasonable terms or if the prevailing party offers no license at all. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors or collaborators. In addition, if the breadth or strength of protection provided by our or our licensors' or collaborators' patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates or platform technology. Even if we successfully defend such litigation or proceedings, they typically require substantial financial assets and it may distract our management and other employees during such proceedings. We could be found liable for monetary damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a materially adverse effect on the price of shares of our common stock.

Third parties may initiate legal proceedings against us alleging that we infringe their intellectual property rights or we may initiate legal proceedings against third parties to challenge the validity or scope of intellectual property rights controlled by third parties, the outcome of which would be uncertain and could have a materially adverse effect on the success of our business and financial condition.

Third parties may initiate legal proceedings against us or our licensors or collaborators alleging that we or our licensors or collaborators infringe their intellectual property rights or we or our licensors or collaborators may initiate legal proceedings against third parties to challenge the validity or scope of intellectual property rights controlled by third parties, including in oppositions, interferences, reexaminations, post-grant reviews, inter partes reviews, or derivation proceedings before the United States or other jurisdictions. These proceedings can be expensive and time-consuming and many of our or our licensors' or collaborators' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors or collaborators can.

An unfavorable outcome could require us or our licensors or collaborators to cease using the related technology or developing or commercializing our product candidates, or to attempt to license rights to it from the prevailing party.

Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license to the disputed technology on commercially reasonable terms or at all. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors or collaborators. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business and financial condition.

We may be subject to claims by third parties asserting that our employees or we have misappropriated their intellectual property, or claiming ownership of what we regard as our own intellectual property.

Many of our employees, including our senior management, were previously employed at universities or in industry at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Some of these employees executed assignment, proprietary right, non-disclosure, or non-competition agreements in connection with such previous employment. Although we try to ensure that our employees do not use the

proprietary information or know-how of any third parties in their work for us, we may be subject to claims that we or these employees have used or disclosed confidential information or intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims, which could be costly and cause significant delays and could materially harm our business and financial condition.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, lose the services of key personnel, or sustain significant monetary damages. Such intellectual property rights could be awarded to a third party, and we could be required to obtain a license from such third party to commercialize our technology or products. Such a license may not be available on commercially reasonable terms or at all. Even if we successfully prosecute or defend against such claims, litigation could result in substantial costs and distract management.

Our inability to protect our confidential information and trade secrets would harm our business and competitive position.

In addition to seeking patents for some of our technology and products, we also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position. We seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our employees, corporate collaborators, outside scientific collaborators, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants. Despite these efforts, any of these parties may breach these agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts both within and outside the United States may be less willing or unwilling to protect trade secrets. If a competitor lawfully obtained or independently developed any of our trade secrets, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position and our business.

Risks Related to this Offering and Ownership of Our Common Stock

We do not know whether an active, liquid and orderly trading market will develop for our common stock or what the market price of our common stock will be and as a result it may be difficult for you to sell your shares of our common stock.

Prior to this offering, no market for shares of our common stock existed and an active trading market for our shares may never develop or be sustained following this offering. We will determine the initial public offering price for our common stock through negotiations with the underwriters, and the negotiated price may not be indicative of the market price of our common stock after this offering. The market value of our common stock may decrease from the initial public offering price. As a result of these and other factors, you may be unable to resell your shares of our common stock at or above the initial public offering price. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. The lack of an active market may also reduce the fair market value of your shares. Furthermore, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic collaborations or acquire companies or products by using our shares of common stock as consideration.

The market price of our stock may be volatile, and you could lose all or part of your investment.

The trading price of our common stock following this offering is likely to be highly volatile and subject to wide fluctuations in response to various factors, some of which we cannot control. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this prospectus, these factors include:

- the success of competitive products or technologies;
- regulatory actions with respect to our products or our competitors' products;
- announcements by us or our competitors of significant acquisitions, strategic collaborations, joint ventures, collaborations or capital commitments;
- results of clinical trials of our product candidates or those of our competitors;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our product candidates or clinical development programs;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be similar to us;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our directors, officers or their affiliated funds or our other stockholders;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors; and
- general economic, industry and market conditions.

In addition, the stock market in general, and The NASDAQ Global Market, or NASDAQ, and biotechnology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. The realization of any of the above risks or any of a broad range of other risks, including those described in this "Risk Factors" section, could have a dramatic and material adverse impact on the market price of our common stock.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering, and you will be relying on the judgment of our management regarding the application of these proceeds. You will not have the opportunity, as part of your investment decision, to assess whether we are using the proceeds appropriately. Our management might not apply our net proceeds in ways that ultimately increase the value of your investment. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

We may sell additional equity or debt securities or enter into other arrangements to fund our operations, which may result in dilution to our stockholders and impose restrictions or limitations on our business.

Until we can generate a sufficient amount of revenue from our products, if ever, we expect to finance future cash needs through public or private equity or debt offerings. We may also seek additional funding through government or other third-party funding and other collaborations, strategic alliances and licensing arrangements.

These financing activities may have an adverse impact on our stockholders' rights as well as on our operations, and such additional funding may not be available on reasonable terms, if at all. If we raise additional funds through the issuance of additional debt or equity securities, it may result in dilution to our existing stockholders and/or increased fixed payment obligations. Furthermore, these securities may have rights senior to those of our common stock and could contain covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Additionally, if we seek funds through arrangements with collaborative partners, these arrangements may require us to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us. Any of these events could significantly harm our business, financial condition and prospects.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. We do not currently have and may never obtain research coverage by securities and industry analysts. If no securities or industry analysts commence coverage of our company, the trading price for our stock would be negatively impacted. If we obtain securities or industry analyst coverage and if one or more of the analysts who covers us downgrades our stock, publishes inaccurate or unfavorable research about our business, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, demand for our stock could decrease, which could cause our stock price and trading volume to decline.

Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.

Prior to this offering, our executive officers, directors, holders of 5% or more of our capital stock and their respective affiliates beneficially owned approximately 64.8% of our outstanding voting stock, including FCMI Parent, which beneficially owned approximately 42.5% of our outstanding voting stock, and, upon closing of this offering, that same group and FCMI Parent will beneficially own approximately % and %, respectively, of our outstanding voting stock (assuming beneficial ownership is calculated in the same manner as set forth in the section entitled "Principal Stockholders" beginning on page 139 of this prospectus).

After this offering, these stockholders will have the ability to control us through this ownership position even if they do not purchase any additional shares in this offering. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you may feel are in your best interest as one of our stockholders. The interests of this group of stockholders may not always coincide with your interests or the interests of other stockholders and they may act in a manner that advances their best interests and not necessarily those of other stockholders, including seeking a premium value for their common stock, and might affect the prevailing market price for our common stock.

We are an "emerging growth company" as defined in the JOBS Act and will be able to avail ourselves of reduced disclosure requirements applicable to emerging growth companies, which could make our common stock less attractive to investors and adversely affect the market price of our common stock.

For so long as we remain an "emerging growth company" as defined in the JOBS Act, we may take advantage of certain exemptions from various requirements applicable to public companies that are not "emerging growth companies" including:

- the provisions of Section 404(b) of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, requiring that our independent registered public accounting firm provide an attestation report on the effectiveness of our internal control over financial reporting;
- the "say on pay" provisions (requiring a non-binding shareholder vote to approve compensation of certain executive officers) and the "say on golden parachute" provisions (requiring a non-binding shareholder vote to approve golden parachute arrangements for certain executive officers in connection with mergers and certain other business combinations) of the Dodd-Frank Wall Street Reform and Protection Act, or Dodd-Frank Act, and some of the disclosure requirements of the Dodd-Frank Act relating to compensation of our Chief Executive Officer;
- the requirement to provide detailed compensation discussion and analysis in proxy statements and reports filed under the Securities Exchange Act of 1934, as amended, or the Exchange Act, and instead provide a reduced level of disclosure concerning executive compensation; and
- any rules that the Public Company Accounting Oversight Board may adopt requiring mandatory audit firm rotation or a supplement to the auditor's report on the financial statements.

We may take advantage of these exemptions until we are no longer an "emerging growth company." We would cease to be an "emerging growth company" upon the earliest of: (i) the first fiscal year following the fifth anniversary of this offering; (ii) the first fiscal year after our annual gross revenues are $1.07 billion or more; (iii) the date on which we have, during the previous three-year period, issued more than $1.0 billion in non-convertible debt securities; or (iv) as of the end of any fiscal year in which the market value of our common stock held by non-affiliates exceeded $700 million as of the end of the second quarter of that fiscal year.

We currently intend to take advantage of some of the reduced regulatory and reporting requirements that will be available to us so long as we qualify as an "emerging growth company." For example, pursuant to Section 107(b) of the JOBS Act, we have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b) of the JOBS Act. This election allows us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result, our financial statements may not be comparable to companies that comply with public company effective dates.

Our independent registered public accounting firm will not be required to provide an attestation report on the effectiveness of our internal control over financial reporting so long as we qualify as an "emerging growth company," which may increase the risk that material weaknesses or significant deficiencies in our internal control over financial reporting go undetected. Likewise, so long as we qualify as an "emerging growth company," we may elect not to provide you with certain information, including certain financial information and certain information regarding compensation of our executive officers, that we would otherwise have been required to provide in filings we make with the Securities and Exchange Commission, or the SEC, which may make it more difficult for investors and securities analysts to evaluate our company. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock price may be more volatile and may decline.

We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to meet compliance obligations.

As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. We will be subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act and the Dodd-Frank Act, as well as rules subsequently implemented thereunder by the SEC and NASDAQ, which will result in significant initial costs to us as well as ongoing increases in our legal, audit and financial compliance costs, particularly after we are no longer an "emerging growth company." Additionally, these laws, regulations and standards are subject to varying interpretations and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies.

Our management and other personnel will need to devote a substantial amount of time to compliance initiatives, which may divert their attention from revenue-generating activities. Moreover, we expect these rules and regulations to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and costly. These costs may increase our consolidated net loss. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to incur substantial costs to maintain sufficient coverage. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers. Any changes that we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

Upon completion of this offering, we will become subject to the periodic reporting requirements of the Exchange Act. We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. After this offering, we will have shares of common stock outstanding based on the number of shares outstanding as of December 31, 2017, assuming: (i) a -for- reverse stock split of our common stock to be effected prior to this offering; (ii) no exercise of the underwriters' option to purchase additional shares; (iii) the conversion of all outstanding shares of our convertible preferred stock into an aggregate of shares of our common stock, assuming such conversion occurred on December 31, 2017; (iv) the repayment of the January 2017 Note and waiver in March 2018 of the related option to participate in a future financing; and (v) the conversion of the June 2016 Note and accrued interest into an aggregate of shares of our common stock, assuming such conversion occurred

on December 31, 2017. This includes the shares that we sell in this offering, which may be resold in the public market immediately without restriction, unless purchased by our affiliates. Of the remaining shares, shares of our common stock are currently restricted as a result of securities laws or lock-up agreements but will be able to be sold after this offering as described in the "Shares Eligible for Future Sale" section of this prospectus.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock may be volatile, and in the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would benefit our stockholders and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws that will become effective immediately prior to the completion of this offering, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us or increase the cost of acquiring us, even if doing so would benefit our stockholders, or remove our current management. These provisions include:

- creating a classified board of directors whose members serve staggered three-year terms;
- authorizing the issuance of "blank check" preferred stock, the terms of which we may establish and shares of which we may issue without stockholder approval;
- prohibiting cumulative voting in the election of directors, which would otherwise allow for less than a majority of stockholders to elect director candidates;
- prohibiting stockholder action by written consent, thereby requiring all stockholder actions to be taken at a meeting of our stockholders;
- eliminating the ability of stockholders to call a special meeting of stockholders; and
- establishing advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted upon at stockholder meetings.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, who are responsible for appointing the members of our management. Because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, or the DGCL, which may discourage, delay or prevent someone from acquiring us or merging with us whether or not it is desired by or beneficial to our stockholders. Under the DGCL, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, the board of directors has approved the transaction. However, because funds affiliated with FCMI Parent acquired their shares prior to this offering, Section 203 is currently inapplicable to any business combination or transaction with it or its affiliates.

Any provision of our amended and restated certificate of incorporation or amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

Some of the statements made in this prospectus constitute forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “may,” “will,” “should,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “potential,” “intends” or “continue,” or the negative of these terms or other comparable terminology.

Forward-looking statements include, but are not limited to, statements about:

- our estimates regarding our expenses, future revenues, anticipated capital requirements and our needs for additional financing;
- the implementation of our business model and strategic plans for our business and technology;
- the timing and success of the commencement, progress and receipt of data from any of our preclinical and clinical trials;
- our expectations regarding the potential safety, efficacy or clinical utility of our product candidates;
- the expected results of any clinical trial and the impact on the likelihood or timing of any regulatory approval;
- the difficulties in obtaining and maintaining regulatory approval of our product candidates;
- the rate and degree of market acceptance of any of our product candidates;
- the success of competing therapies and products that are or become available;
- regulatory developments in the United States and foreign countries;
- current and future legislation regarding the healthcare system;
- the scope of protection we establish and maintain for intellectual property rights covering our technology;
- developments relating to our competitors and our industry;
- our failure to recruit or retain key scientific or management personnel or to retain our executive officers;
- the performance of third parties, including collaborators, contract research organizations and third-party manufacturers;
- the development of our commercialization capabilities, including the need to develop or obtain additional capabilities; and
- our use of the proceeds from this offering.

These statements are only current predictions and are subject to known and unknown risks, uncertainties and other factors that may cause our or our industry’s actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. We discuss many of these risks in greater detail under the section entitled “Risk Factors” and elsewhere in this prospectus. You should not rely upon forward-looking statements as predictions of future events.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. Except as required by law, after the date of this prospectus, we are under no duty to update or revise any of the forward-looking statements, whether as a result of new information, future events or otherwise.

This prospectus also contains estimates, projections and other information concerning our industry, the market and our business. Information that is based on estimates, forecasts, projections or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. We obtained the industry, market and competitive position data in this prospectus from our own internal estimates and research as well as from industry and general publications and research surveys and studies conducted by third parties.

IMPLICATIONS OF BEING AN EMERGING GROWTH COMPANY

As a company with less than $1.07 billion in revenue during our last fiscal year, we qualify as an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. An emerging growth company may take advantage of specified reduced reporting and other burdens that are otherwise applicable generally to public companies. These provisions include:

- a requirement to have only two years of audited financial statements and only two years of related management’s discussion and analysis in this prospectus;
- an exemption from compliance with the auditor attestation requirement on the effectiveness of our internal controls over financial reporting;
- an exemption from compliance with any requirement that the Public Company Accounting Oversight Board may adopt regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements;
- reduced disclosure about the company’s executive compensation arrangements; and
- exemptions from the requirements to obtain a non-binding advisory vote on executive compensation or a stockholder approval of any golden parachute arrangements.

We may take advantage of these provisions for up to five years or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company if we have more than $1.07 billion in annual revenues, have more than $700 million in market value of our capital stock held by non-affiliates, or issue more than $1.0 billion of non-convertible debt over a three-year period. We may choose to take advantage of some, but not all, of the available benefits under the JOBS Act. We have taken advantage of some reduced reporting burdens in this prospectus. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you hold stock.

In addition, pursuant to Section 107(b) of the JOBS Act, we have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b) of the JOBS Act. This election allows us to delay the adoption of some accounting standards until those standards apply to private companies. As a result, our financial statements may not be comparable to companies that comply with public company effective dates.

USE OF PROCEEDS

We estimate that the net proceeds from the sale of shares of common stock in this offering will be approximately $ million, based on an assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters exercise their over-allotment option in full, we estimate that our net proceeds will be $ million based on an assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to obtain additional capital to support our operations, establish a public market for our common stock and to facilitate our future access to the public capital markets. We currently expect to use net proceeds from this offering for the following purposes:

- approximately $ million to fund development of VX15 as a combination therapy with avelumab in patients with NSCLC who have not previously been treated with immunotherapy, which includes funding through the primary completion date of the CLASSICAL–Lung clinical trial that we initiated in October 2017;
- approximately $ million to fund development of VX15 as a therapy in Huntington's disease through the end of 2019;
- approximately $ million to fund continued preclinical research using our platform technologies; and
- the remainder, if any, for working capital and general corporate purposes, including but not limited to exploratory studies or ISTs of the application of VX15 in other indications.

We may also make the decision to repay the June 2016 Note and accrued interest with the proceeds from this offering.

The expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures depend on numerous factors, including the progress of our preclinical and clinical development efforts and any unforeseen cash needs. As a result, our management will have broad discretion over the use of the net proceeds from this offering. The amounts and timing of our expenditures will depend upon numerous factors. Pending the uses described above, we intend to invest the net proceeds from this offering in interest-bearing, investment-grade securities.

Although it is difficult to predict future liquidity requirements, we believe that the net proceeds from this offering, together with our existing cash and cash equivalents, will fund our operations until the end of 2019.

Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, would increase (decrease) the net proceeds to us from this offering by approximately $ million, assuming the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. An increase of 1.0 million shares in the number of shares offered by us, together with a concurrent $1.00 increase in the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, would increase the net proceeds to us from this offering by approximately $ million after deducting underwriting discounts and commissions and estimated offering expenses payable by us. Conversely, a decrease of 1.0 million shares in the number of shares offered by us together with a concurrent $1.00 decrease in the assumed initial public offering price of $ per share, which

is the midpoint of the estimated price range set forth on the cover of this prospectus, would decrease the net proceeds to us from this offering by approximately $ million after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The as adjusted information discussed above is illustrative only and will adjust based on the actual initial public offering price and other terms of this offering determined at pricing.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings, if any, to fund the development of our business, and we do not intend to declare or pay any cash dividends in the foreseeable future. As a result, you will likely need to sell your shares of common stock to realize a return on your investment, and you may not be able to sell your shares at or above the price you paid for them. Any future determination related to dividend policy will be made at the discretion of our board of directors and will depend upon, among other factors, our results of operations, financial condition, capital requirements, contractual restrictions, business prospects and other factors our board of directors may deem relevant. Our future ability to pay cash dividends on our common stock may be limited by the terms of any future debt or preferred securities.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2017 on:

- an actual basis;
- a pro forma basis giving effect to the following as if each had occurred as of December 31, 2017:
  - receipt of an $8.0 million capital contribution from VX3 noncontrolling interests in March 2018;
  - repayment of the January 2017 Note;
  - conversion of all outstanding shares of our preferred stock into an aggregate of shares of our common stock; and
  - conversion of the June 2016 Note and accrued interest into an aggregate of shares of our common stock, based on an assumed conversion price of $ per share, which is 85% of the midpoint of the estimated price range set forth on the cover of this prospectus; and
- a pro forma as adjusted basis giving further effect to the sale by us of shares of common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

The information in this table is illustrative only and our capitalization following the completion of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read this table in conjunction with the information contained in “Use of Proceeds,” “Selected Consolidated Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” as well as the financial statements and the notes thereto included elsewhere in this prospectus.

	As of December 31, 2017		
(in thousands, except share and per share amounts)	Actual	Pro Forma(1)	Pro Forma(1) As Adjusted
Cash and cash equivalents	$ 4,180	$	$
Convertible promissory notes to related party, net	2,813		
Accrued interest on convertible promissory notes	192		
Derivative liabilities	369		
Redeemable convertible preferred stock (Series B, B-1, B-2, C, D), par value of $0.001 per share; 66,317,000 shares authorized as of December 31 2017; 53,089,959 shares issued and 53,089,796 shares outstanding as of December 31, 2017 with aggregate liquidation preference of $140,261 as of December 31, 2017, actual; no shares issued and outstanding as of December 31, 2017, pro forma (unaudited)	111,718		
Stockholders’ (deficit) equity			
Convertible preferred stock (Series A), par value of $0.001 per share; 5,702,450 shares authorized, issued and outstanding as of December 31, 2017 with aggregate liquidation preference of $7,684 as of December 31, 2017, actual; no shares issued and outstanding as of December 31, 2017, pro forma (unaudited)	7,684		
Common stock, par value of $0.0001 per share; 160,000,000 shares authorized as of December 31, 2017; 11,034,077 shares issued as of December 31, 2017; 11,025,717 shares outstanding as of December 31, 2017, actual; shares issued and shares outstanding as of December 31, 2017, pro forma (unaudited)	1		
Additional paid-in capital	54,122		
Treasury stock, at cost	(11)		
Accumulated deficit	(187,249)		
Noncontrolling interests	11,963		
Total stockholders’ (deficit) equity	(113,490)		
Total capitalization	$ 1,602		

(1) Pro forma presentation also reflects (a) in connection with the January 2017 Note, the waiver in March 2018 of the option to participate in a future financing and the write-off of derivative liabilities as a result of the repayment and the waiver, and (b) in connection with the conversion of the June 2016 Note, the related reclassification of the embedded derivative liability associated with the June 2016 Note into additional paid-in capital.

The outstanding share information in the table above is based on shares of common stock outstanding as of December 31, 2017, which gives effect to the pro forma transactions described above and excludes the following:

- shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, of which shares will be beneficially owned by FCMI Parent;
- shares of common stock issuable upon the exchange of limited partnership interests of VX3, of which shares will be owned by FCMI Parent;
- shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2017 under our 2001 Plan and our 2011 Plan, at a weighted-average exercise price of $ per share; and
- shares of our common stock reserved for issuance under our 2018 Plan, which will become effective upon completion of this offering, as well as any future increases in the number of shares of our common stock reserved for issuance under the 2018 Plan.

DILUTION

If you invest in our common stock, your ownership interest will be diluted to the extent of the difference between the assumed initial public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering. Net tangible book value per share of our common stock is determined at any date by subtracting our total liabilities from the amount of our total tangible assets (total assets less intangible assets) and dividing the difference by the number of shares of our common stock deemed to be outstanding at that date.

Our historical net tangible book deficit as of December 31, 2017 was approximately $1.8 million, or $0.16 per share, based on 11,025,717 shares of common stock outstanding as of December 31, 2017. Our pro forma net tangible book value as of December 31, 2017 was $ million, or $ per share of common stock. Our pro forma net tangible book value per share gives effect to the following as if had occurred as of December 31, 2017: (i) receipt of an $8.0 million capital contribution from VX3 noncontrolling interests in March 2018; (ii) conversion of all outstanding shares of our preferred stock into an aggregate of shares of our common stock; (iii) repayment of the January 2017 Note, waiver in March 2018 of the related option to participate in a future financing, and write-off of derivative liabilities as a result of the repayment and waiver; (iv) conversion of the June 2016 Note and accrued interest into an aggregate of shares of our common stock and related reclassification of the embedded derivative liability associated with the June 2016 Note into additional paid-in capital.

After giving effect to the sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of December 31, 2017 would have been $ million, or $ per share. This amount represents an immediate increase in pro forma as adjusted net tangible book value of $ per share to existing stockholders and an immediate dilution of $ per share to investors purchasing shares in this offering. The following table illustrates this dilution on a per share basis to new investors:

Assumed initial public offering price per share		$
Historical net tangible book deficit per share as of December 31, 2017	$0.16	
Pro forma increase in net tangible book value per share attributable to pro forma transactions and other adjustments described above		
Pro forma net tangible book value per share before this offering		
Pro forma increase in net tangible book value (deficit) per share attributable to investors in this offering		
Pro forma as adjusted net tangible book value per share after this offering		
Dilution in pro forma as adjusted net tangible book value per share to new investors in this offering		$

Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, would increase (decrease) our pro forma as adjusted net tangible book value per share after this offering by $, and the dilution to new investors by $, assuming that the number of shares offered by us, as set forth on the cover of this prospectus, remains the same, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

We may also increase or decrease the number of shares we are offering. An increase of 1.0 million shares in the number of shares offered by us would increase our pro forma as adjusted net tangible book value (deficit) as of December 31, 2017, by approximately $ million or by $ per share and decrease the dilution per share

to new investors purchasing common stock in this offering by $, assuming the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. Conversely, a decrease of 1.0 million shares in the number of shares offered by us would decrease our pro forma as adjusted net tangible book value (deficit) as of December 31, 2017, by approximately $ million or by $ per share and increase the dilution per share to new investors purchasing common stock in this offering by $, assuming the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their over-allotment option in full, the pro forma as adjusted net tangible book value (deficit) per share after giving effect to this offering would be $ per share, which amount represents an immediate increase in pro forma net tangible book value (deficit) of $ per share of our common stock to existing stockholders and an immediate dilution in net tangible book value (deficit) of $ per share of our common stock to new investors purchasing shares of common stock in this offering.

If all of our outstanding stock options had been exercised as of December 31, 2017, assuming the treasury stock method, our pro forma net tangible book value as of December 31, 2017, before giving effect to the issuance and sale of shares in this offering, would have been $ million, or $ per share, and our pro forma as adjusted net tangible book value as of December 31, 2017 after this offering would have been $ million, or $ per share, causing dilution to new investors of $ per share.

In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

Effective upon completion of this offering, shares of our common stock will be reserved for future issuance under our 2018 Plan and the number of reserved shares under our 2018 Plan will also be subject to automatic annual increases in accordance with the terms of the plan. New awards that we may grant under our 2018 Plan will further dilute investors purchasing common stock in this offering.

The following table summarizes, as of December 31, 2017, the differences between the number of shares of common stock purchased from us, after giving effect to the pro forma adjustments described above, the total cash consideration paid to us and the average price per share paid by existing stockholders and by our new investors purchasing shares in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, before deducting the underwriting discounts and commissions and estimated offering expenses payable by us:

	Shares Purchased		Total Cash Consideration		Average Price Per Share
(in thousands, except per share amounts)	**Number**	**Percent**	**Amount**	**Percent**	
Existing stockholders		%		%	
New investors		%		%	
Total		100%		100%	

The above tables and discussions are based on shares of common stock outstanding as of December 31, 2017, which gives effect to the pro forma transactions described above and excludes:

- shares of common stock issuable upon the exchange of the limited partnership interests of Vaccinex Products, of which shares will be beneficially owned by FCMI Parent;
- shares of common stock issuable upon the exchange of the limited partnership interests of VX3, of which shares will be owned by FCMI Parent;

- shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2017 under our 2001 Plan and our 2011 Plan, at a weighted-average exercise price of $ per share; and
- shares of our common stock reserved for issuance under our 2018 Plan, which will become effective upon completion of this offering, as well as any future increases in the number of shares of our common stock reserved for issuance under the 2018 Plan.

SELECTED CONSOLIDATED FINANCIAL DATA

You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes included elsewhere in this prospectus and the information set forth in the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations." We have derived the selected consolidated statements of operations data for the years ended December 31, 2016 and 2017 and the consolidated balance sheet data as of December 31, 2016 and 2017 from our audited consolidated financial statements appearing elsewhere in this prospectus. Our historical results are not necessarily indicative of the results to be expected for a full year or any period in the future. Our consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP.

(in thousands, except share and per share data)	Year Ended December 31, 2016	2017
Consolidated Statement of Operations Data:		
Revenue	$ 316	$ 90
Costs and expenses:		
Cost of revenue	115	160
Research and development(1)	16,028	16,551
General administrative(1)	4,432	4,483
Total costs and expenses	20,575	21,194
Loss from operations	(20,259)	(21,104)
Change in fair value of derivative liabilities	9,310	3,743
Interest expense	(2,990)	(1,358)
Other expense, net	(4)	(40)
Loss before provision for income taxes	(13,943)	(18,759)
Provision for income taxes	–	–
Net loss	(13,943)	(18,759)
Net loss attributable to noncontrolling interests	–	37
Net loss attributable to Vaccinex, Inc.	$ (13,943)	$ (18,722)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)
Deemed dividend from Series C redeemable convertible preferred stock modification	(9,079)	–
Net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (26,233)	$ (21,933)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted(2)	$ (2.53)	$ (1.99)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, Inc., basic and diluted(2)	10,381,417	11,019,375
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)(2)		$
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)(2)		

(1) Includes stock-based compensation expense as follows:

(in thousands)	Year Ended December 31, 2016	2017
Research and development	$ 65	$ 54
General and administrative	70	265
Total stock-based compensation expense	$ 135	$ 319

(2) See Note 12 to our audited consolidated financial statements for an explanation of the method used to calculate our actual and pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders.

(in thousands)	December 31, 2016	2017
Consolidated Balance Sheet		
Cash and cash equivalents	$ 1,661	$ 4,180
Working capital	(2,328)	809
Total assets	2,842	5,575
Convertible promissory notes to related party, net	1,037	2,813
Derivative liabilities	694	369
Total liabilities	6,171	7,347
Redeemable convertible preferred stock	103,736	111,718
Convertible preferred stock	7,684	7,684
Total stockholders' deficit	(107,065)	(113,490)

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of financial condition and results of operations together with the section titled "Selected Consolidated Financial Data" and our consolidated financial statements and related notes included elsewhere in this prospectus. This discussion and other parts of this prospectus contain forward-looking statements that involve risk and uncertainties, such as statements of our plans, objectives, expectations and intentions. Our actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors."

Company Overview

We are a clinical-stage biotechnology company engaged in the discovery and development of targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, including cancer, neurodegenerative diseases, and autoimmune disorders. We believe we are the leader in the field of SEMA4D biology, and that we are the only company targeting SEMA4D as a potential treatment for cancer, neurodegenerative diseases, or autoimmune disorders. SEMA4D is an extracellular signaling molecule that regulates the migration of immune and inflammatory cells to sites of injury, cancer or infection. We are leveraging our SEMA4D antibody platform and our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15, which we believe utilizes novel mechanisms of action. We are focused on developing VX15 for the treatment of NSCLC and Huntington's disease. Additionally, in coordination with us, one investigator is studying VX15 in osteosarcoma and another is expected to study VX15 in melanoma. We have developed multiple proprietary platform technologies and are developing product candidates to address serious diseases or conditions that have a substantial impact on day-to-day functioning and for which treatment is not addressed adequately by available therapies. We employ our proprietary platform technologies, including through our work with our academic collaborators, to identify potential product candidates for sustained expansion of our internal product pipeline and to facilitate strategic development and commercial partnerships.

Our lead platform technologies include our SEMA4D antibody platform and our ActivMAb antibody discovery platform. In addition, we and our academic collaborators are using our NKT vaccine platform to discover product candidates that target and extend the activity of NKT cells. Our lead product candidate, VX15, is currently in clinical development for the treatment of NSCLC, osteosarcoma and Huntington's disease, through our efforts or through ISTs. Our additional product candidates VX5 and VX25 are in earlier stages of development and were selected using our ActivMAb and NKT vaccine platforms, respectively. We believe our multiple platform technologies position us well for continued pipeline expansion and partnership opportunities going forward.

We have generated a limited amount of service revenue from collaboration agreements but have not generated any revenue from product sales to date. We continue to incur significant development and other expenses related to our ongoing operations. As a result, we are not and have never been profitable and have incurred losses in each period since our inception. For the years ended December 31, 2016 and 2017, we reported a net loss of $13.9 million and $18.8 million. As of December 31, 2017, we had cash and cash equivalents of $4.2 million. We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek regulatory approvals for, our product candidates. Our recurring net losses and negative cash flows from operations have raised substantial doubt regarding our ability to continue as a going concern, and as a result, our independent registered public accounting firm has noted this in the opinion they issued on our consolidated financial statements for the years ended December 31, 2016 and 2017. We may also encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenues, if any. Our prior losses

and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

Financial Overview

Revenue

To date, we have not generated any revenue from product sales. During the years ended December 31, 2016 and 2017, we generated a limited amount of service revenue from our collaboration agreements, including with Surface Oncology, Inc., or Surface, and Merck Sharp & Dohme Corp., or Merck.

Our ability to generate revenue and become profitable depends on our ability to successfully obtain marketing approval of and commercialize our product candidates. We do not expect to generate product revenue in the foreseeable future as we continue our development of, and seek regulatory approvals for, our product candidates, and potentially commercialize approved products, if any.

Operating Expenses

Research and Development. Research and development expenses consist primarily of costs incurred for the development of our product candidates and are expensed when incurred. These costs consist of third-party consulting services, laboratory supplies, research materials, laboratory equipment, costs associated with preclinical and clinical development activities and regulatory operations, license fees, computer equipment and licensed technology, related depreciation and amortization and employee related expenses such as compensation, including stock-based compensation, employee benefits and travel.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in preclinical or earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. As we proceed with the development of our product candidates, we plan to increase our research and development expenses for the foreseeable future, including as a result of ongoing and planned clinical trials for VX15. We completed a Phase 1 clinical trial for VX15 as a single-agent cancer therapy and a Phase 1 dose-escalation trial of VX15 in MS patients in 2014. We initiated a Phase 2 clinical trial in early-stage and prodromal Huntington's disease patients in July 2015 and the CLASSICAL–Lung Phase 1b/2 clinical trial in combination with avelumab in patients with non-small cell lung cancer in October 2017. Additionally, in coordination with us, one investigator is studying VX15 in osteosarcoma and another is expected to study VX15 in melanoma.

We cannot determine with certainty the duration and completion costs of the current or future clinical trials of our product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates that obtain regulatory approval. We may never succeed in achieving regulatory approval for any of our product candidates. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including the uncertainties of future clinical and preclinical studies, uncertainties in clinical trial enrollment rate and significant and changing government regulation. In addition, the probability of success for each product candidate will depend on numerous factors, including competition, manufacturing capability and commercial viability. We will determine which programs to pursue and how much to fund each program in response to the scientific and clinical success of each product candidate, as well as an assessment of each product candidate's commercial potential and the availability of funding.

***General and Administrative*.** Our general and administrative expenses consist primarily of compensation, including stock-based compensation, and employee benefits for our finance, human resources, regulatory and other administrative personnel. In addition, general and administrative expenses include third-party consulting, legal, audit and accounting services, and allocated facilities costs.

We expect general and administrative expenses will increase for the foreseeable future as we incur additional costs associated with being a publicly traded company, including legal, accounting, additional insurance premiums, investor relations and general compliance and consulting costs, as well as other costs associated with growing our business.

Change in Fair Value of Derivative Liabilities

The June 2016 Note contains a feature that upon a qualifying financing event, which includes the sale of shares in a future preferred stock financing with gross proceeds of at least $5.0 million or the issuance of shares of common stock in an initial public offering, the outstanding principal, together with accrued interest, of the June 2016 Note would convert into shares of the newly issued securities at 85% of the price paid in the financing. Our convertible promissory notes issued pursuant to a bridge loan agreement entered into in January 2017, or the January 2017 Notes, contained a similar feature, except that the conversion price of the January 2017 Notes upon a qualifying financing was the lesser of (1) $1.82 per share or (2) 85% of the price per share of the newly issued securities. In connection with the issuance of the January 2017 Notes, we entered into a side letter agreement with the holder thereof, which provided the holder with an option to purchase shares of equity in a future qualifying financing at a price per share equal to the January 2017 Note conversion price, or the option arrangement. These conversion features were determined to be embedded derivatives requiring bifurcation and separate accounting. In addition, the option arrangement was determined to be a free-standing derivative requiring separate accounting. The derivative liabilities are remeasured to fair value as of each balance sheet date with the corresponding gain or loss from the adjustment recorded in the consolidated statements of operations. The remaining outstanding January 2017 Note as of December 31, 2017 was repaid on March 8, 2018 and the option arrangement was waived. We will continue to adjust the liability for changes in fair value for the June 2016 Note until the earlier of conversion or the repayment of the June 2016 Note.

Interest Expense

Interest expense consists primarily of interest and amortization of debt discounts related to our convertible promissory notes.

Other Expense, Net

Other expense, net consists primarily of foreign currency exchange loss.

Results of Operations

The following table set forth our results of operations for the periods presented:

	Year Ended December 31,	
	2016	2017
	(in thousands)	
Revenue	$ 316	$ 90
Costs and expenses:		
Cost of revenue	115	160
Research and development	16,028	16,551
General and administrative	4,432	4,483
Total costs and expenses	20,575	21,194
Loss from operations	(20,259)	(21,104)
Change in fair value of derivative liabilities	9,310	3,743
Interest expense	(2,990)	(1,358)
Other expense, net	(4)	(40)
Loss before provision for income taxes	(13,943)	(18,759)
Provision for income taxes	–	–
Net loss	(13,943)	(18,759)
Net loss attributable to noncontrolling interests	–	37
Net loss attributable to Vaccinex, Inc.	$(13,943)	$(18,722)

Comparison of the Years Ended December 31, 2016 and 2017

Revenue

	Year Ended December 31,			
	2016	2017	$ Change	% Change
	(in thousands)			
Service revenue	$316	$90	$ (226)	(72)%
Total revenue	$316	$90	$ (226)	(72)%

Service Revenue. Service revenue in the year ended December 31, 2017 decreased $0.2 million, or 72%, compared to the year ended December 31, 2016. The decrease was primarily due to the completion of a collaboration agreement in November 2016.

Cost of Revenue

	Year Ended December 31,			
	2016	2017	$ Change	% Change
	(in thousands)			
Cost of revenue	$115	$160	$ 45	39%

Cost of Revenue. Cost of revenue in the year ended December 31, 2017 increased $45,000, or 39%, compared to the year ended December 31, 2016. The increase is primarily driven by additional cost from two new collaboration agreements entered into during the year ended December 31, 2017 in which the related revenues have not yet been fully recognized.

Operating Expenses

	Year Ended December 31,			
	2016	2017	$ Change	% Change
	(in thousands)			
Research and development	$16,028	$16,551	$ 523	3%
General and administrative	4,432	4,483	51	1
Total operating expenses	$20,460	$21,034	$ 574	3%

Research and Development. Research and development expenses in the year ended December 31, 2017 increased by $0.5 million, or 3%, compared to the year ended December 31, 2016. This increase was primarily attributable to a $0.4 million increase payroll related expenses as a result of increased headcounts for clinical project management and drug supply management and a $0.3 million increase in manufacturing costs as a result of increased drug supply for patients enrolled in active clinical trials, partially offset by $0.2 million decrease in clinical services as a result of fluctuation in the service cost.

General and Administrative. General and administrative expenses in the year ended December 31, 2017 stayed relatively consistent compared to the year ended December 31, 2016.

Change in Fair Value of Derivative Liabilities

	Year Ended December 31,			
	2016	2017	$ Change	% Change
	(in thousands)			
Change in fair value of derivative liabilities	$9,310	$3,743	$(5,567)	(60)%

Change in fair value of derivative liabilities in the year ended December 31, 2017 changed by $5.6 million, or 60%, compared to the year ended December 31, 2016. The change was primarily due to a $9.5 million valuation gain upon conversion of a number of our outstanding convertible promissory notes into Series D redeemable convertible preferred stock during the year ended December 31, 2016, and a decrease of $3.7 million in the fair value of derivative liabilities associated with the June 2016 Note, the January 2017 Note and the option arrangement related to the January 2017 Note due to the reduced conversion probability during the year ended December 31, 2017. The $4.0 million January 2017 Note was repaid in March 2018, and the associated option arrangement of the note holder was waived. See Note 15 in our consolidated financial statements.

Interest Expense

	Year Ended December 31,			
	2016	2017	$ Change	% Change
	(in thousands)			
Interest expense	$2,990	$1,358	$(1,632)	(55)%

Interest expense in the year ended December 31, 2017 decreased by $1.6 million, or 55% compared to the year ended December 31, 2016, primarily due to conversion of most of our outstanding convertible promissory notes in December 2016. During the year ended December 31, 2016, $1.5 million debt discount amortization expense and $1.4 million interest accrual on the convertible promissory notes were recorded as interest expense. During the year ended December 31, 2017, $1.2 million debt discount amortization expense and $0.1 million interest accrual on the January 2017 Notes were recorded as interest expense.

Liquidity and Capital Resources

To date, we have not generated any revenue from product sales. Since our inception in 2001, we have financed our operations principally through private placements of our preferred stock, issuances of convertible promissory notes and other promissory notes and funding from collaboration agreements with our variable interest entities. Through December 31, 2017, we have received net proceeds of $87.1 million from the issuance of shares of our preferred stock, $39.0 million from issuance of convertible promissory notes and $60.1 million from our variable interest entities.

Operating Capital Requirements

Our primary uses of capital are, and we expect will continue to be, compensation and related expenses, third-party research services and amounts due to vendors for research supplies. As of December 31, 2016 and 2017, our principal source of liquidity was cash and cash equivalents in the amount of $1.7 million and $4.2 million. We expect that our existing cash and cash equivalents, together with the net proceeds from this offering, will enable us to conduct our planned operations until the end of 2019.

Since our inception in 2001, we have incurred significant net losses and negative cash flows from operations. During the years ended December 31, 2016 and 2017, we had net losses of $13.9 million and $18.8 million. As of December 31, 2016 and 2017, we had an accumulated deficit of $168.5 million and $187.2 million. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates. We are subject to all of the risks associated with the development of new biopharmaceutical products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business.

Until we can generate a sufficient amount of revenue from our products, we expect to finance future cash needs through public or private equity, debt offerings, or capital contributions from our noncontrolling interests. In 2018, VX3 received a commitment of $8.0 million of additional funding from FCMI Parent, which we received in the first quarter. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us we may have to significantly delay, scale back or discontinue the development of one or more of our product candidates. If we raise additional funds through the issuance of additional debt or equity securities it could result in dilution to our existing stockholders, increased fixed payment obligations and these securities may have rights senior to those of our common stock and could contain covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license our intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Any of these events could significantly harm our business, financial condition and prospects.

Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the scope, rate of progress, results and cost of our clinical trials, preclinical studies and other research and development activities;
- the timing of, and the costs involved in, obtaining regulatory approvals for any of our current or future drug candidates we may develop or in-license, including requirements for us to perform more studies than those that we currently expect;
- the number and characteristics of product candidates that we develop or in-license, if any;

- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the effect of competing technological and market developments;
- our ability to establish collaborative arrangements to the extent necessary;
- the economic and other terms, timing and success of any collaboration, licensing, distribution or other arrangements into which we may enter in the future;
- revenues received from any future products; and
- payments received under any current or future strategic partnerships.

If a lack of available capital results in an inability to expand our operations or otherwise capitalize on our business opportunities, our business, financial condition and results of operations could be materially adversely affected.

Cash Flows

The following table summarizes our cash flows for the periods presented:

	Year Ended December 31,	
	2016	2017
	(in thousands)	
Cash used in operating activities	$ (19,720)	$ (21,387)
Cash used in investing activities	(793)	(68)
Cash provided by financing activities	16,357	23,974

Operating Activities. We have historically experienced negative cash flows as we developed our product candidates and continued to expand our business. Our net cash used in operating activities primarily results from our net loss adjusted for non-cash expenses and changes in working capital components as we have continued our research and development, and is influenced by the timing of cash payments for research related expenses. Our primary uses of cash from operating activities are compensation and related-expenses, employee-related expenditures, third-party research services and amounts due to vendors for research supplies. Our cash flows from operating activities will continue to be affected principally by the extent to which we increase spending on personnel, research and development and other operating activities as our business grows.

During the year ended December 31, 2017, operating activities used $21.4 million in cash, primarily as a result of our net loss of $18.8 million, aggregate non-cash items of $2.0 million, and $0.6 million net change in our operating assets and liabilities. Non-cash items included $3.7 million gain in fair value of derivative liabilities, $1.2 million amortization of debt discount related to the convertible promissory notes, $0.3 million of stock-based compensation expense and $0.2 million depreciation expense. The net change in our operating assets and liabilities was primarily the result of $0.6 million decrease in accounts payable and $0.3 million decrease in prepaid and other current assets as we made payments for clinical trial related expense, partially offset by $0.3 million increase in deferred revenue resulted from cash receipts from our collaboration partners for services to be provided in future periods.

During the year ended December 31, 2016, operating activities used $19.7 million in cash, primarily as a result of our net loss of $13.9 million, aggregate non-cash charges of $7.4 million, which was partially offset by $1.7 million net change in our operating assets and liabilities. Non-cash charges included $1.6 million in amortization of promissory notes, $0.2 million depreciation expense and $0.1 million stock-based compensation expense, partially offset by $9.3 million gain in fair value of embedded derivative liability. The net change in our operating assets and liabilities was primarily the result of $1.1 million increase in accrued expenses, $0.4 million increase in accounts payable, $0.3 million increase in prepaid expenses and other current assets, partially offset by $0.1 million decrease in accounts receivable.

Investing Activities. Cash used in investing activities during the years ended December 31, 2016 and 2017 of $0.8 million and $0.1 million resulted from capital expenditures to purchase property and equipment.

Financing Activities. During the year ended December 31, 2017, financing activities provided $24.0 million primarily attributable to the capital contribution from noncontrolling interests of $12.0 million, net proceeds of $10.0 million from the issuance of convertible promissory notes to related parties and $8.0 million from the issuance of Series D redeemable convertible preferred stock, which was partially offset by a $6.0 million repayment of convertible promissory notes and accrued interest to related parties.

During the year ended December 31, 2016, financing activities provided $16.4 million primarily attributable to the net proceeds of $4.5 million from the issuance of convertible promissory notes to related parties, $10.7 million from the issuance of Series D redeemable convertible preferred stock and $2.0 million in proceeds from the issuance of convertible promissory notes, which was partially offset by a $0.8 million repayment of convertible promissory notes and accrued interest to a related party.

Convertible Promissory Notes

During the year ended December 31, 2016, we raised approximately $6.5 million through the issuance of convertible promissory notes of which $5.0 million converted into Series D redeemable convertible preferred stock in December 2016. During the year ended December 31, 2017, we raised funds through the issuance of another $10.0 million of convertible promissory notes of which $6.0 million were repaid in the same year. As of December 31, 2017, the following convertible promissory notes remained outstanding:

- the June 2016 Note to a related party in the amount of $1.5 million; and
- the January 2017 Note to a related party in the amount of $4.0 million.

The June 2016 Note, together with accrued interest, is convertible: (i) automatically upon a future qualifying financing event, which includes the sale of shares in a future preferred stock financing with gross proceeds of at least $5.0 million or the issuance of shares of common stock in an initial public offering; (ii) upon a change of control (unless the lenders elect to treat such event as a default); or (iii) upon a future non-qualifying financing event at the election of the lenders. Upon a future qualifying financing event, the outstanding principal, together with accrued interest, would convert into shares of the newly issued securities at 85% of the price paid in the financing. Upon the election to convert the June 2016 Note in the event of a change of control, the outstanding principal, together with accrued interest, would convert based on the conversion price of the Series C redeemable convertible preferred stock, which was $1.82 per share as of December 31, 2016 and 2017, at the time of conversion. Upon the election to convert the June 2016 Note in the event of a non-qualifying financing event, the outstanding principal, together with accrued interest, would convert based on the lowest price per share paid for in the financing.

The January 2017 Note outstanding as of December 31, 2017, which was repaid on March 8, 2018, did not accrue interest and had a maturity date three years from issuance. The conversion terms of the January 2017 Notes were similar to the June 2016 Note, except that the conversion price of the January 2017 Notes upon a qualifying financing was the lower of (1) $1.82 per share, or (2) 85% of the price per share of the newly issued securities. In connection with the issuance of the January 2017 Notes, we also entered into the option arrangement, which granted the related party an exclusive option to acquire shares with a fair value of up to $4.0 million in the next qualifying financing, at a price per share equal to the conversion price of the January 2017 Notes, which option arrangement was later waived.

The June 2016 Note is, and all of the convertible promissory notes were, allowed to be prepaid, plus accrued interest if applicable, without penalty. We may make the decision to repay the June 2016 Note and accrued interest with the proceeds from this offering.

Capital Contribution from Noncontrolling Interests

In November 2017, we entered into a license agreement, or the VX3 License Agreement, with VX3, which was formed in October 2017 by a group of Canadian investors including our majority stockholder FCMI Parent. Under the VX3 License Agreement, we granted VX3 the license to use, make, have made, sell, offer and import VX15 for the treatment of Huntington's disease in the U.S. and Canada. Pursuant to the VX3 License Agreement, VX3 agreed to pay us up to an aggregate of $32.0 million in milestone payments and to share any VX15 profits and sublicensing revenue under the agreement in an amount based on a calculation set forth in the agreement. In connection with the VX3 License Agreement, we also entered into a services agreement with VX3, or the Services Agreement, effective as of January 1, 2017, pursuant to which we will carry out development activities for VX15 for the treatment of Huntington's disease in the U.S. and Canada in exchange for services payments from VX3, including a payment of $11.9 million for 2017. On February 28, 2018, the Services Agreement was amended to provide for an additional payment of $8.0 million from VX3 for services performed in 2018. The VX3 License Agreement expires upon the last to expire licensed patent, and may be terminated by either party upon uncured material breach, the occurrence of certain transactions or financings including the consummation of an initial public offering by us, uncured failure of VX3 to make any payment due under the services agreement, or upon written notice after November 6, 2020. The Services Agreement may be terminated by either party upon uncured material breach and is automatically terminated upon termination of the VX3 License Agreement. The VX3 License Agreement provides that upon termination, we will issue to VX3 or its designees the number of shares of our common stock equal to the lesser of (1) the aggregate of all payments made to VX3 by the Canadian investors divided by $1.82 and (2) the then fair market value of VX3 divided by the then fair market value of one share of our common stock.

We have determined VX3 to be a variable interest entity (VIE) in which we are the primary beneficiary. As such, we recorded the gross proceeds of $12.0 million received from VX3 as a capital contribution from noncontrolling interests on our consolidated financial statements as of and for the year ended December 31, 2017.

Contractual Obligations

Our contractual commitments will have an impact on our future liquidity. The following table summarizes our contractual obligations as of December 31, 2017, which represents contractually committed future obligations:

	Payments Due by Period				
	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
			(in thousands)		
Convertible promissory notes(1)	$5,890	$ –	$5,890	$ –	$ –
Operating lease obligations(2)	140	140	–	–	–
Total	$6,030	$ 140	$5,890	$ –	$ –

(1) For additional information, see Note 6 of our consolidated financial statements. Amount includes both principal and interest.
(2) Represents future minimum lease payments under our operating lease for our facilities in Rochester, New York. The minimum lease payments above include our share of increases in costs incurred by the landlord in the operation, maintenance, repair and management of this property.

Off-Balance Sheet Arrangements

During 2016 and 2017, we did not have any off-balance sheet arrangements as defined in the rules and regulations of the SEC.

Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risk in the ordinary course of our business. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in interest rates. We do not hold or issue financial instruments for trading purposes.

Interest Rate Risk

Our cash and cash equivalents primarily consist of highly liquid checking and money market funds. Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of the interest rates in the United States. However, because of the short-term nature of the instruments in our portfolio, a sudden change in market interest rates would not be expected to have a material impact on our consolidated financial statements.

Borrowings under our convertible promissory note agreement related to the June 2016 Note have a fixed interest rate, and the June 2016 Note is not expected to be outstanding for a long period. Accordingly, a hypothetical 100-basis point increase or decrease in interest rates would not be expected to have a material impact on our borrowings or results of operations.

Foreign Currency Risk

The majority of our purchase contracts are denominated in U.S. dollars. However, we pay certain of our suppliers and third-party research and development service providers in a foreign currency under the terms of their supply agreements, and we may pay other suppliers and third-party research and development service providers in the future in foreign currency. To date, any resulting gains and losses from such transactions have not been significant. We do not currently engage in any hedging transactions.

JOBS Act Accounting Election

We are an “emerging growth company” within the meaning of the JOBS Act. Section 107(b) of the JOBS Act provides that an emerging growth company can leverage the extended transition period, provided in Section 102(b) of the JOBS Act, for complying with new or revised accounting standards. Thus, an emerging growth company can delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. We have elected to use this extended transition period and, as a result, our financial statements may not be comparable to companies that comply with public company effective dates.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, expenses and related disclosures. We evaluate our estimates and assumptions on an ongoing basis. Our estimates are based on historical experience and various other assumptions that we believe to be reasonable under the circumstances. Our actual results could differ from these estimates.

We believe that the assumptions and estimates have the greatest potential impact on our consolidated financial statements. Therefore, we consider these to be our critical accounting policies and estimates. For further information on all of our significant accounting policies, see Note 2 to our consolidated financial statements.

Accrued Research and Development Expenses

As part of the process of preparing our financial statements, we are required to estimate our accrued research and development expenses. This process involves reviewing open contracts and purchase orders,

communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date in our financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments if necessary.

Examples of estimated accrued research and development expenses include fees paid to:

- third-party research and development service providers in connection with clinical studies;
- investigative sites in connection with clinical studies;
- vendors in connection with preclinical development activities; and
- vendors related to product manufacturing, development and distribution of clinical supplies.

We base our expenses related to clinical studies on our estimates of the services received and efforts expended pursuant to contracts with multiple third-party research and development service providers that conduct and manage clinical studies on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the clinical expense. Payments under some of these contracts depend on factors such as the successful enrollment of subjects and the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed, enrollment of subjects, number of sites activated and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid accordingly. Although we do not expect our estimates to be materially different from amounts actually incurred, if our estimates of the status and timing of services performed differs from the actual status and timing of services performed we may report amounts that are too high or too low in any particular period. To date, there have been no material differences from our estimates to the amount actually incurred.

Stock-Based Compensation

Stock-based compensation expense is measured and recognized in the consolidated financial statements based on the fair value of the awards granted. The fair value of each stock option award is estimated on the grant date using the Black-Scholes option-pricing model. Stock-based compensation expense is recognized, net of forfeitures, over the requisite service periods of the awards.

Our use of the Black-Scholes stock option-pricing model requires the input of highly subjective assumptions, including the fair value of the underlying common stock, expected term of the stock option, expected volatility of the price of our common stock, risk-free interest rates and the expected dividend yield of our common stock. The assumptions used in our stock option-pricing model represent management's best estimates. These estimates involve inherent uncertainties and the application of management's judgment. If factors change and different assumptions are used, our stock-based compensation expense could be materially different in the future.

These assumptions and estimates are as follows:

Fair Value of Common Stock. As our stock is not publicly traded, we must estimate the fair value of common stock, as discussed in "Common Stock Valuations" below.

Expected Term. The expected term represents the period that our stock option awards are expected to be outstanding. We consider several factors in estimating the expected term of stock options granted, including

the expected lives used by a peer group of companies within our industry that we consider to be comparable to our business and the historical stock option exercise behavior of our employees, which we believe is representative of future behavior.

Expected Volatility. As we do not have a trading history for our common stock, the expected stock price volatility for our common stock was estimated by taking the average historic price volatility for industry peers based on daily price observations over a period equivalent to the expected term of the stock option grants. Industry peers consist of several public companies in our industry, which were the same as the comparable companies used in the common stock valuation analysis. We intend to continue to consistently apply this process using the same or similar public companies until a sufficient amount of historical information regarding the volatility of our own share price becomes available, or unless circumstances change such that the identified companies are no longer similar to us, in which case, more suitable companies whose share prices are publicly available would be used in the calculation.

Risk-Free Interest Rate. We base the risk-free interest rate on the yields of zero coupon U.S. Treasury securities with maturities similar to the term of employee stock option awards.

Expected Dividend Yield. We have never declared or paid any cash dividends on common stock and do not presently plan to pay cash dividends in the foreseeable future. Consequently, we used an expected dividend yield of zero.

Stock-based compensation expense was $0.1 million and $0.3 million during the years ended December 31, 2016 and 2017. As of December 31, 2017, we had $0.2 million of total unrecognized stock-based compensation costs which we expect to recognize over a weighted-average period of 1.9 years.

Common Stock Valuations

We are a private company with no active public market for our common stock. Therefore, the fair value of the common stock underlying our stock options was determined by our board of directors, which intended all stock options granted to be exercisable at a price per share not less than the per share fair value of our common stock underlying those stock options on the date of grant. Our board of directors used valuations of our common stock performed in accordance with the guidelines outlined in the American Institute of Certified Public Accountants Practice Aid, *Valuation* of *Privately-Held-Company Equity Securities Issued as Compensation*, or AICPA Practice Aid. The assumptions we use in the valuation model are based on future expectations combined with management judgment. In the absence of a public trading market, our board of directors, with input from management, exercised significant judgment and considered numerous objective and subjective factors to determine the fair value of our common stock as of the date of each stock option grant, including the following factors:

- valuations performed by unrelated third-party specialists;
- the prices, rights, preferences and privileges of our preferred stock relative to those of our common stock;
- the prices of our preferred stock sold to outside investors in arm’s-length transactions;
- the lack of marketability of our common stock;
- our actual operating and financial performance;
- current business conditions and projections;
- our hiring of key personnel and the experience of our management;
- our history and the timing of the introduction of new products and services;
- our stage of development;
- the likelihood of achieving a liquidity event, such as an initial public offering or a merger or acquisition of our business given prevailing market conditions;

- the illiquidity of stock option awards involving securities in a private company;
- the market performance of comparable publicly traded companies; and
- the U.S. and global capital market conditions.

In valuing our common stock as of each valuation date for the stock option grants, the fair value of our business, or enterprise value, was determined based on value indications from using either the backsolve method or market approach described in the AICPA Practice Aid. Under the backsolve method, the equity value was determined based on a recent Series C, Series D redeemable preferred stock equity financing and capital contribution from VX3 noncontrolling interest. Under the market approach, comparable initial public offerings listed in 2016 and 2017 are used to establish a range of equity values. The enterprise values determined were then adjusted to (i) add back cash on hand and (ii) remove outstanding debt obligations in order to derive an equity value. The resulting equity values were then allocated to the common stock using a stock option pricing method. After the equity value was determined and allocated to the various classes, a discount for lack of marketability, or DLOM, was applied to arrive at the fair value of our common stock. A DLOM was applied based on the theory that, as a private company, an owner of the stock has limited opportunities to sell this stock and any such sale would involve significant transaction costs, thereby reducing overall fair market value.

For financial reporting purposes, our assessments of the fair value of our common stock for grant dates between dates of valuations included an evaluation of whether any significant changes to our business had occurred between the previous valuation and the grant date; however, historically our board of directors has determined that there has not been any significant changes and used the fair value of the common stock as of the date of the most recent, prior valuation as the exercise price for these grants.

For valuations after the consummation of this offering, our board of directors will determine the fair value of each share of underlying common stock based on the closing price of our common stock on the date of grant, as reported on The NASDAQ Stock Market.

Income Taxes and Net Operating Loss Carryforwards

Income Taxes. We are subject to income taxes in the United States, and we use estimates in determining our provision for income taxes. We use the asset and liability method of accounting for income taxes. Under this method, we calculate deferred tax asset or liability account balances as of the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect our taxable income.

On December 22, 2017, the Tax Act was signed into law. The Tax Act makes broad and complex changes to the Code including, but not limited to, reducing the U.S. federal corporate income tax rate. While the Tax Act reduces the U.S. federal corporate income tax rate from 35% to 21% for tax years beginning after December 31, 2017, ASC 740 requires us to remeasure its deferred tax balances in 2017 in accordance with the 2018 rate reduction.

We estimate actual current tax exposure together with assessing temporary differences resulting from differences in accounting for reporting purposes and tax purposes for certain items, such as accruals and allowances not currently deductible for tax purposes. These temporary differences result in deferred tax assets and liabilities, which are included in our consolidated balance sheets. In general, deferred tax assets represent future tax benefits to be received when certain expenses previously recognized in our consolidated statements of operations and comprehensive loss become deductible expenses under applicable income tax laws or when net operating loss or credit carryforwards are utilized. Accordingly, realization of our deferred tax assets is dependent on future taxable income against which these deductions, losses and credit carryforwards can be utilized.

We assess the likelihood of our deferred tax assets will be recovered from future taxable income, and to the extent we believe that recovery is not likely, we establish a valuation allowance. We recorded a reduction of

deferred income tax assets of $20.7 million in the year ended December 31, 2017 related to the remeasurement of our net deferred tax assets to reflect the U.S. federal corporate income tax rate reduction to 21%, which was fully offset by a change to our valuation allowance. As of December 31, 2016 and 2017, we have a full valuation allowance set up for our net deferred tax assets.

Net Operating Loss Carryforwards. As of December 31, 2017, we had federal and state operating loss carryforwards of $170.2 million and $181.3 million, which begin to expire in the year ending December 31, 2024 and 2034, respectively. We had federal research and development tax credit carryforwards of $11.5 million as of December 31, 2017. These credits expire at various dates through the year ending December 31, 2021. As of December 31, 2017, we recorded a 100% valuation allowance against our net operating loss and research and development tax credit carryforwards, as we believe it is more likely than not that the tax benefits will not be fully realized. In the future, if we determine that a portion or all of the tax benefits associated with our tax carryforwards will be realized, net income would increase in the period of determination.

As of December 31, 2017, our federal and state returns for the years ended 2014 through the current period are still open to examination. Net operating losses and research and development carryforwards that may be used in future years are still subject to inquiry given that the statute of limitation for these items would be from the year of the utilization. There are no tax years under examination by any jurisdiction at this time.

Under federal and similar state tax statutes, changes in our ownership, including ownership changes resulting from this offering, may limit our ability to use our available net operating loss and tax credit carryforwards. The annual limitation, as a result of a change of ownership, may result in the expiration of net operating losses and credits before utilization. Our ability to use our remaining net operating loss carryforwards may be further limited if we experience an ownership change in connection with this offering or as a result of future changes in our stock ownership.

Derivative Liabilities

During the years ended December 31, 2016 and 2017, we issued a number of convertible promissory notes in the aggregate amount of $16.5 million. As discussed under the heading “Liquidity and Capital Resources,” our convertible promissory notes, together with accrued interest, are convertible upon certain events, including a future qualifying financing event, which includes the sale of shares in a future preferred stock financing with gross proceeds of at least $5.0 million or the issuance of shares of common stock in an initial public offering. Upon a future qualifying financing event, the outstanding principal, together with accrued interest, would convert into shares of the newly issued securities at 85% of the price paid in the financing in the case of the June 2016 Note, which is the only convertible promissory note that remains outstanding as of April 13, 2018.

The conversion features were determined to be embedded derivatives, and the option arrangement was considered a free-standing derivative, which were both recognized as liabilities on the consolidated balance sheets as of the end of each respective year. The derivative liabilities are remeasured to fair value as of each balance sheet date with the corresponding gain or loss from the adjustment recorded in the consolidated statements of operations. The fair value of the derivative liabilities associated with the convertible promissory notes were measured using a with-and-without valuation methodology. Inputs used to determine the estimated fair value of this derivative instrument include the probability estimates of potential settlement scenarios for the convertible promissory notes, a present value discount rate and an estimate of the expected timing of settlement. The significant unobservable inputs used in the fair value measurement of the embedded derivative associated with the convertible promissory notes are the scenario probabilities and the discount rate estimated at the valuation date. Generally, an increase or decrease in the discount rate would result in a directionally opposite impact to the fair value measurement of this derivative instrument. Changes in the probability scenarios would have also varying impacts depending on the weighting of each specific scenario. Heavier weighting towards a qualified financing, including an initial public offering, would result in an increase in the fair value of the embedded derivative instrument associated with the conversion option.

We will continue to adjust the liability for changes in fair value until the earlier of conversion or the repayment of the June 2016 Note.

Recent Accounting Pronouncements Not Yet Adopted

For a discussion of recent accounting pronouncements that we have not yet adopted, see Note 2 to our consolidated financial statements.

Recently Adopted Accounting Pronouncements

For a discussion of accounting pronouncements that we have recently adopted, see Note 2 to our consolidated financial statements.

BUSINESS

Overview

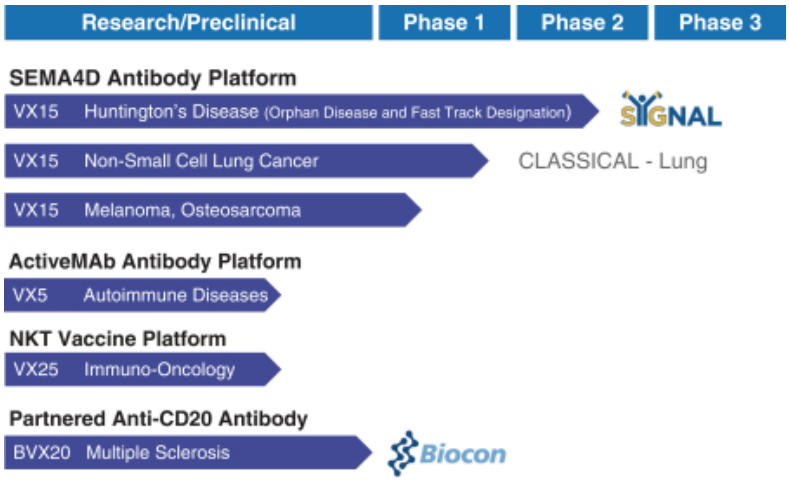
We are a clinical-stage biotechnology company engaged in the discovery and development of targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, including cancer, neurodegenerative diseases, and autoimmune disorders. We believe we are the leader in the field of SEMA4D biology and that we are the only company targeting SEMA4D as a potential treatment for cancer, neurodegenerative diseases, or autoimmune disorders. SEMA4D is an extracellular signaling molecule that regulates the migration of immune and inflammatory cells to sites of injury, cancer or infection. We are leveraging our SEMA4D antibody platform and our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15, which we believe utilizes novel mechanisms of action. We are focused on the development of VX15 for the treatment of NSCLC, osteosarcoma, melanoma and Huntington's disease. We have developed multiple proprietary platform technologies and are developing product candidates to address serious diseases or conditions that have a substantial impact on day-to-day functioning and for which treatment is not addressed adequately by available therapies. We employ our proprietary platform technologies, including through our work with our academic collaborators, to identify potential product candidates for sustained expansion of our internal product pipeline and to facilitate strategic development and commercial partnerships.

Our lead platform technologies include our SEMA4D antibody platform and our ActivMAb antibody discovery platform.

- ***Our SEMA4D antibody platform*** is the application of our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15 for the treatment of various indications, including cancer and neuroinflammatory and neurodegenerative diseases. VX15's mechanisms of action block the SEMA4D signal and activate innate physiological mechanisms to respond to tumors or tissue injury. We have demonstrated in animal models in preclinical studies that the biological activities associated with an antibody blockade of SEMA4D can promote immune cell infiltration into tumors and the repair or prevention of neurological damage in neuroinflammatory and neurodegenerative diseases.
- ***Our ActivMAb antibody discovery platform*** is a proprietary human antibody discovery platform based on a novel method for expressing large and diverse libraries of high affinity, full-length human monoclonal antibodies on the surface of vaccinia, a mammalian virus. We believe our ActivMAb technology offers (i) rapid generation of high affinity, full-length, human monoclonal antibodies synthesized and naturally modified in mammalian cells, (ii) expression and selection of antibodies that easily and predictably transition to manufacturing in mammalian lines, and (iii) an innovative and efficient method for selecting antibodies against multi-pass membrane proteins, an important class of pharmacological targets. Our product candidate VX5 was generated by our ActivMAb platform and is currently in preclinical development for the treatment of autoimmune disorders. We intend to continue to utilize our ActivMAb platform to identify additional product candidates for our own pipeline development and for strategic collaborations.

In addition, we and our academic collaborators are using our NKT vaccine platform to discover product candidates that target and extend the activity of NKT cells. NKT cells work directly to kill certain types of parasites and cells, including tumor cells and virus-infected cells. We are applying our agonists to direct NKT cells to the site of tumors, potentially enhancing tumor-specific immunity through recruitment and activation of cytotoxic T cells, or CTL, and antibody-armed natural killer, or NK, cells that will work to eradicate the tumor.

Our Product Pipeline



Our lead product candidate VX15 is currently in clinical development for the treatment of NSCLC, osteosarcoma and Huntington's disease, through our efforts or through ISTs. Our additional product candidates VX5 and VX25 are in earlier stages of development and were generated using our ActivMAb and NKT vaccine platforms, respectively. We believe our multiple platform technologies position us well for continued pipeline expansion and partnership opportunities going forward.

VX15

VX15 is a humanized monoclonal antibody that binds and blocks the signaling activity of SEMA4D. We are advancing VX15 with what believe to be novel mechanisms of action for the treatment of cancer and certain neurodegenerative diseases, including Huntington's disease. To date, 164 patients have been treated with VX15 in four Phase 1 clinical trials and one Phase 2 clinical trial in separate indications.

Cancer – NSCLC, Osteosarcoma and Melanoma

VX15 is currently being studied as a treatment for advanced solid tumors, including NSCLC, osteosarcoma, and melanoma. We have demonstrated in preclinical tumor models in our study of VX15 that SEMA4D regulates infiltration of immune precursor cells into tumor tissue. Our preclinical data suggest that blocking SEMA4D promotes infiltration of immune cells that can eradicate the tumor. We have also demonstrated in preclinical models the potential for synergy between VX15 and a checkpoint inhibitor when used in combination. We completed a Phase 1 clinical trial of VX15 as a single-agent cancer therapy and released top-line data in October 2014. VX15 was well tolerated in this clinical trial and showed early evidence of immune-mediated activity. In October 2017 in collaboration with Merck KGaA, we initiated the CLASSICAL–Lung clinical trial, a Phase 1b/2 clinical trial of VX15 in combination with avelumab, an inhibitor of the PD-1/PD-L1 checkpoint pathway, in patients with NSCLC who have not previously been treated with immunotherapy. In February 2018, COG, with financial support of the National Cancer Institute, initiated a Phase 1/2 clinical trial of VX15 as a single agent in pediatric patients with recurrent, relapsed, or refractory solid tumors, including osteosarcoma. In the second quarter of 2018, an IST of VX15 in combination with *Yervoy* and with *Opdivo* is expected to begin at UCLA's Jonsson Comprehensive Cancer Center in patients with advanced melanoma who have progressed on prior anti-PD-1/PD-L1 based therapies.

Huntington's Disease

We are studying VX15 as a treatment for Huntington's disease, which is a neurodegenerative genetic disorder that typically manifests in mid-adult life. Our study of VX15 in Huntington's disease is based on our prior research of neurodegenerative disease mechanisms, where we demonstrated in preclinical models that SEMA4D triggers activation of both microglia and astrocytes, the innate inflammatory cells of the central nervous system, or CNS. The chronic activation of microglia and astrocytes has been implicated as an important disease mechanism in Huntington's disease, progressive MS, and other neurodegenerative disorders. We initiated the SIGNAL study, a Phase 2 clinical trial, in July 2015 in early-stage and prodromal Huntington's disease patients. This clinical trial builds upon preclinical studies in an animal model of Huntington's disease and safety data from a Phase 1 dose-escalation clinical trial of VX15 in MS patients that we completed in November 2014. The SIGNAL study has an adaptive design, and interim analysis of Cohort A data for 36 randomized patients was completed in April 2017. On the basis of this data, the design of the Cohort B study was modified. Eighty two of a planned 200 patients have been enrolled in Cohort B as of January 2018, and the estimated primary completion date is May 2020. The FDA's Division of Neurology Products has granted both orphan drug designation and Fast Track designation to VX15 for Huntington's disease.

VX5

We discovered VX5 using our ActivMAb platform. VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissues, and is currently in preclinical development with academic collaborators for the treatment of autoimmune disorders. In preclinical studies, anti-CXCL13 antibodies, such as VX5, have been shown to reduce CXCL13-induced B cell and T helper cell migration, which contributes to inflammatory and autoimmune responses. Therapeutic administration of anti-CXCL13 antibody has also been demonstrated to prevent disease progression in mouse models of rheumatoid arthritis and MS.

VX25

VX25 is an investigational, bi-specific molecule based on our NKT vaccine platform. VX25 aims to address two major challenges for the therapeutic application of NKT cell stimulation for cancer immunotherapy: (i) the activation of NKT cells without inducing tolerance, or the natural resistance to a second cycle of activation by a strong agonist; and (ii) the efficient targeting of NKT cells to the site of tumors. We and our academic collaborators have designed molecules that incorporate a potent NKT-activating glycolipid in one arm and a tumor-targeting antibody fragment in a second arm. These constructs are being evaluated in various preclinical cancer models.

Our Strategy

Our goal is to rapidly and cost-effectively develop targeted biotherapeutics that will provide safe, substantial and sustained benefits to patients with serious diseases and unmet medical needs. The principal elements of our business strategy are to:

- ***Develop VX15 in combination with checkpoint inhibitors as a therapy for patients with NSCLC***. We have initiated the CLASSICAL–Lung clinical trial, a Phase 1b/2 clinical trial of VX15 in combination with avelumab, an inhibitor of the PD-1/PD-L1 checkpoint pathway in patients with NSCLC. Enrollment was initiated in October 2017, and we anticipate top-line data in 2019.
- ***Develop VX15 as a therapy in Huntington's disease***. We initiated the SIGNAL study, a Phase 2 multi-center, randomized, double-blind, placebo-controlled clinical trial in subjects with late prodromal and early manifest Huntington's disease in July 2015. The SIGNAL study has an adaptive design, and interim analysis of Cohort A data for 36 randomized patients was completed in April 2017. On the basis of this data, the design of the Cohort B study was modified, and 82 of a planned 200 patients have been enrolled in Cohort B as of January 2018. The estimated primary completion date is May 2020.

- ***Apply our SEMA4D antibody platform to treat serious diseases with unmet needs, including additional neurodegenerative disease and cancer indications.*** We plan to build on the development work in Huntington's disease to pursue treatments, potentially in collaboration with strategic partners, for additional neurodegenerative diseases, including progressive MS and Alzheimer's disease. We also plan to pursue the application of our SEMA4D antibody platform to a variety of other cancers, including sarcoma, melanoma, colorectal, ovarian, breast, renal, gastric and bladder cancers.
- ***Leverage our existing SEMA4D collaborations and establish new partnerships.*** We plan to build on our current research collaborations and establish new partnerships with pharmaceutical companies to explore various applications of our SEMA4D technology and continue to study VX15 in combination with other cancer immunotherapies in development.
- ***Utilize our ActivMAb antibody discovery platform to identify human antibodies for our own pipeline development and for strategic collaborations.*** As demonstrated by the selection of VX5 for the treatment of autoimmune disorders, we plan to utilize our ActivMAb platform to select additional product candidates for development or partnership. We currently have active agreements for antibody selection, including with Merck and Surface.

As illustrated below, each of our two major platforms, SEMA4D and ActivMAb, is the subject of multiple existing research collaborations. We are actively engaged in discussions regarding additional collaborations.

Partner/Collaborator	Purpose of Relationship
SEMA4D / VX15	
Ares Trading S.A. (Merck KGaA, Darmstadt Germany)	Phase 1b/2 clinical trial of VX15 in combination with avelumab, a checkpoint inhibitor, in patients with NSCLC who have not previously been treated with immunotherapy.
The Children's Hospital of Philadelphia, on behalf of Children's Oncology Group	Phase 1/2 IST of VX15 as a single agent in pediatric patients with recurrent, relapsed, or refractory solid tumors, including osteosarcoma.
Emory University	Phase 1 IST evaluating VX15 as a single agent and in combination with ipilimumab or nivolumab in pre-surgical cancer patients.
Huntington Study Group	General CRO-related services for Phase 2 clinical trial of VX15 in early-stage and prodromal Huntington's disease patients.
UCLA Jonsson Comprehensive Cancer Center (expected)	Phase 1 IST of VX15 in combination with *Yervoy* and *Opdivo* in patients with melanoma whose tumors have progressed following treatment with any anti-PD-1/PD-L1 antibody.
ActivMAb	
Catalent Pharma Solutions, LLC	Selection of an antibody to a cancer membrane target suitable for construction of an antibody drug conjugate employing proprietary Catalent technology.
Merck Sharp & Dohme Corp.	Testing of vaccinia strain Modified Vaccinia Ankara with genetic sequences designed by us.
Surface Oncology, Inc.	Identification and selection of antibodies against two target antigens using our proprietary technology.

Background on the Immune System and Antibodies

The immune system is a powerful mechanism to defend and protect the body from pathogens, such as viruses, parasites and bacteria, and provides surveillance against cancers, by recognizing and responding to their characteristic antigens. The power of the immune system can, however, also present dangers, as misdirected immune responses can cause devastating autoimmune diseases. To address these issues, the immune system has evolved to encompass two interacting arms, an aggressive arm that serves to eradicate infection and has the potential to kill tumors and a regulatory arm that serves to limit the magnitude and duration of immune responses. The balance of activity between these two arms has evolved to allow effective responses to the numerous pathogens in our environment, the primary threat to the integrity of organisms. This balance is, however, not necessarily well calibrated to respond to weaker antigenic challenges such as those of tumors that differ in relatively subtle ways from our normal tissues to which we are generally tolerant. Advances in our understanding of these regulatory mechanisms and our ability to develop drugs that modulate their effects, such as checkpoint inhibitors, has enabled important advances in immunotherapy and the treatment of cancer. We believe our SEMA4D antibody platform offers what we believe to be novel mechanisms of immune modulation that could further enhance the beneficial effects of immunotherapy in cancer.

Key interacting elements of the immune system that play a role in either aggressive or regulatory responses include:

- *B lymphocytes, or B cells*, which are a type of white blood cell that produce antibodies in response to foreign antigens in the body. Activated B cells can produce factors that either enhance or limit immune responses.
- *T lymphocytes, or T cells,* which are a type of white blood cell generally divided into three subsets:
  - *T helper cells*, which secrete specialized factors that activate other cells, such as B cells, to fight off infection;
  - *CTL*, which directly kill certain types of parasites and cells, including tumor cells and virus-infected cells, and
  - *Regulatory T cells, or Tregs*, which can limit the activity of other immune cells.
- *Dendritic cells*, which capture and present antigens to T lymphocytes in the lymphoid organs where an immune response is initiated. Some dendritic cell subsets activate and others suppress immune responses.
- *Macrophages*, some subsets, such as M1 type macrophage, help to regulate immune response by essentially picking up and ingesting foreign materials and presenting these antigens to activate other antigen-specific cells of the immune system, such as T cells and B cells. Other macrophage subsets, such as M2 type macrophage, are immunoregulatory and tolerogenic–that is, they can incapacitate other immune cells.
- *NK cells*, which directly destroy certain types of tumors or cells infected with viruses.
- *NKT cells*, which can both directly destroy target cells and recruit and activate other immune effector cells to the site of tumor or infection.

The immune system protects the body through various mechanisms that recognize and eliminate bacteria, viruses and other pathogens, and abnormal cells such as cancer cells. These mechanisms initiate a series of signals resulting in stimulation of the immune system in response to pathogenic or abnormal cells. The activities of the immune system are undertaken by its two components: the innate immune system and the adaptive immune system.

The role of the innate immune system is to provide a rapid, non-specific response to a pathogen or abnormal cells in the body and to facilitate activation of the adaptive immune system. The innate immune system consists of specialized cells such as macrophages, dendritic cells, monocytes and NKT cells. When the body recognizes a pathogen, it activates these specialized cells of the innate immune system, resulting in a cascade of signaling events that cause the production of proteins to fight the infection caused by the pathogen.

In contrast to the innate immune system, the adaptive immune system provides a pathogen-specific response to an infection. The adaptive immune system does this through the recognition by specific receptors expressed on B cells and T cells of specific proteins, called antigens, which are part of the pathogen or abnormal cell. Signals produced by the innate immune system facilitate this process. Upon recognition of an antigen, which could come from pathogens or from cancer cells, the adaptive immune system produces antibodies and antigen-specific immune cells that specifically detect and destroy cells that express the antigen. T cells and B cells (and the antibodies derived from the mature B cell) of this adaptive immune system respond to the many antigenic differences between pathogens and human cells or to small structural differences that, for example, distinguish a cancer cell from a normal cell.

Monoclonal antibodies are proteins manufactured in cell lines that can bind to specific substances in the body, including cancer cells and molecules that regulate immune responses. Monoclonal antibodies can be used alone to enhance immune responses or to direct NK cells to tumors or to carry drugs, toxins or radioactive substances directly to the cancer cells. Therapeutic monoclonal antibodies are typically derived from genes encoding specific natural antibodies and are produced by introducing those genes into specially adapted mammalian manufacturing cell lines. The antibody's ability to bind specifically to a target or antigen is also referred to as its specificity. Using this mechanism, antibodies can tag foreign substances for attack by other immune system cells or neutralize the targets directly. In treating diseases such as cancer, researchers either find antigens specific to cancer cells, create antibodies that bind those antigens to use the body's immune system to destroy the cancer cells or target immune regulatory mechanisms to increase the magnitude and duration of protective immune responses.

Our SEMA4D Antibody Platform

Overview

Our SEMA4D antibody platform is the application of our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15 for the treatment of various indications, including to promote immune cell infiltration into tumors as well as to inhibit neuroinflammatory and neurodegenerative diseases. VX15, a molecule that blocks the signaling activity of SEMA4D, is currently in development for the treatment of NSCLC, osteosarcoma and of Huntington's disease. We intend to use our SEMA4D platform to address additional cancer indications and neurodegenerative diseases in the future.

VX15

VX15 is a humanized monoclonal antibody that binds and blocks the signaling activity of SEMA4D, which is an extracellular signaling molecule that regulates the migration of immune and inflammatory cells to sites of injury, cancer or infection. SEMA4D signals through the plexin-B1, or PLXNB1, receptor expressed on many precursor cells. The PLXNB1 receptor molecule can activate the R-Ras protein, which regulates adhesion to the extracellular matrix. Binding of SEMA4D to PLXNB1 can also either activate or inactivate RhoA protein and its effect on ROCK-kinase, which regulates the cell cytoskeleton. These two activities, cell adhesion and cytoskeletal reorganization, control the migration of precursor cells. Precursor cells play an important role in maintaining health and repairing tissue damage in the adult organism by migrating to a target location in the body where they can differentiate into mature functional cells. In the case of an immune precursor cell, the mature cell can engage in protective activity against a tumor or infection. Other precursor cells are dedicated to repairing tissue damage, such as precursor cells that can remyelinate nerve axons at a demyelinated lesion. Depending on the nature of a precursor cell and its natural signaling cascade, a precursor cell will respond to SEMA4D by being attracted or repelled. However, the fundamental biology of activation and migration of precursor cells to a target location in the body where they can differentiate into mature functional cells is the same across multiple types of tissues.

As a result, VX15's ability to affect SEMA4D's regulation of precursor cells may be relevant to multiple disease indications. In cancer, we believe VX15 will promote the infiltration of immune precursor cells into the

tumor. In Huntington's disease, we believe VX15 will mobilize precursor cells that repair damage to myelin and neurons and prevent chronic activation of inflammatory cells of the brain, microglia and astrocytes, which is implicated in neurodegenerative diseases.

We have performed numerous preclinical studies in animal disease models to investigate the mechanisms of action of the anti-SEMA4D antibody. VX15 is a humanized version of our antibody used in preclinical studies. The mouse antibody and the humanized antibody we plan to use in our clinical trials are closely related and have very similar properties, including specificity and affinity. As a result, they are both referred to as VX15 in our preclinical studies and in the clinical trials described in this prospectus.

Collaboration and IST Agreements

Merck KGaA

In October 2016, we entered into a clinical trial collaboration and supply agreement with Merck KGaA through its subsidiary Ares Trading S.A. to test VX15 in combination with avelumab checkpoint inhibitor in NSCLC patients whose tumors have progressed on or following chemotherapy, which is the CLASSICAL–Lung clinical trial. We are the investigational new drug application, or IND, sponsor of this study and Merck KGaA shares in the cost of the trial. Either party may elect to extend the collaboration to one additional cancer indication under certain circumstances. The agreement does not convey rights or a license to Merck KGaA to either manufacture or sell VX15. The agreement continues in full force until completion of all of the obligations of the parties under the agreement. Either party may terminate the agreement upon uncured material breach, good faith belief that safety issues give rise to imminent danger to patients, if a regulator takes action that prevents the party from supplying its compound for purposes of the study, or if it determines to discontinue development of its compound for material safety, medical, scientific, legal or regulatory reasons. Merck may terminate the agreement upon written notice for our failure to adequately respond to notice of Merck's good faith belief that avelumab is being used in an unsafe manner in the trial.

UCLA Jonsson Comprehensive Cancer Center

We expect to enter into an Investigator Sponsored Clinical Trial Agreement, or ISTA, with the University of California Los Angeles Jonsson Comprehensive Cancer Center, or UCLA, during the second quarter of 2018. We expect to provide VX15 drug and financial support for a Phase 1 IST of VX15 in combination with *Yervoy* and with *Opdivo* in two cohorts of patients with melanoma whose tumors have progressed following treatment with any anti-PD-1/PD-L1 antibody. The *Yervoy* and *Opdivo* checkpoint inhibitors will be provided by Bristol-Myers Squibb, or BMS, under a separate agreement with UCLA. We will provide funding for site clinical operations and clinical laboratory testing of patient samples at Covance Central Labs.

Children's Oncology Group

In December 2017, we entered into an agreement for an IST with Children's Hospital of Philadelphia, or CHOP, on behalf of COG, to provide VX15 for a Phase1/2 clinical trial to study VX15 as a single agent in treating younger patients with recurrent, relapsed, or refractory solid tumors, including osteosarcoma. We will provide VX15 drug and limited funding for clinical laboratory testing of patient samples, but all other clinical trial expenses will be funded by the National Cancer Institute, or the NCI, through a grant to COG. No license rights to VX15 are conveyed to CHOP, COG or the NCI by this agreement.

Emory

In November 2017, we entered into an agreement for an IST with Emory University to provide VX15 and financial support for a Phase 1 clinical trial evaluating VX15 as a single agent and in combination with ipilimumab or nivolumab in pre-surgical patients with resectable pancreatic and colorectal cancer. The study will evaluate the effect of the regimens on the immune profile in the tumor microenvironment and in peripheral

blood. We will provide antibodies for neo-adjuvant administration and funding for site clinical operations prior to resection and clinical laboratory testing of patient samples. No license rights to VX15 are conveyed to Emory University by this agreement.

Huntington Study Group (SIGNAL)

In March 2015, we entered into a Clinical Trial Management Agreement with The Huntington Study Group, or HSG, to provide general CRO-related services for the SIGNAL study in Huntington's disease, including management of subcontractors involved in the clinical trial, at approximately 30 clinical sites in the United States and Canada, each covered by a standard clinical trial agreement between us, as IND sponsor, HSG and the clinical site. Payments are on a fee for service basis. No license rights to VX15 are conveyed to HSG by this agreement.

VX15 in Cancer

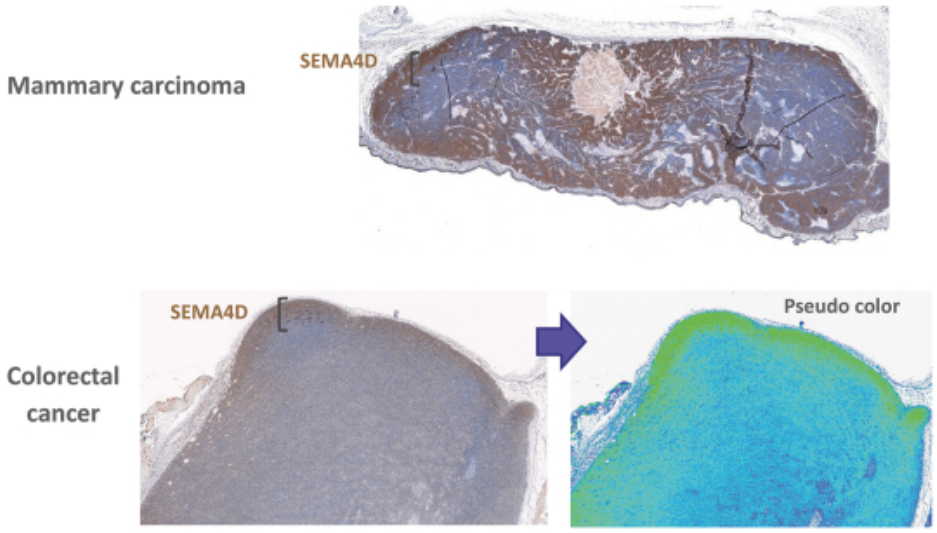
Overview

We are studying VX15 as a treatment for advanced solid tumors, including NSCLC. Our preclinical data suggest that blocking of SEMA4D promotes infiltration of immune cells that can eradicate the tumor. We completed a Phase 1 clinical trial of VX15 as a single-agent cancer therapy and released top-line data in October 2014. We initiated the CLASSICAL–Lung clinical trial of VX15 in combination with avelumab, a checkpoint inhibitor of the PD-1/PD-L1 pathway, in October 2017 in patients with NSCLC who have not been previously treated with immunotherapy.

The Role of SEMA4D in Cancer

As illustrated in Figure 1, we have demonstrated in preclinical research that many tumors express a high concentration of SEMA4D at the invasive tumor margin, the growing edge of the tumor, creating an apparent barrier.

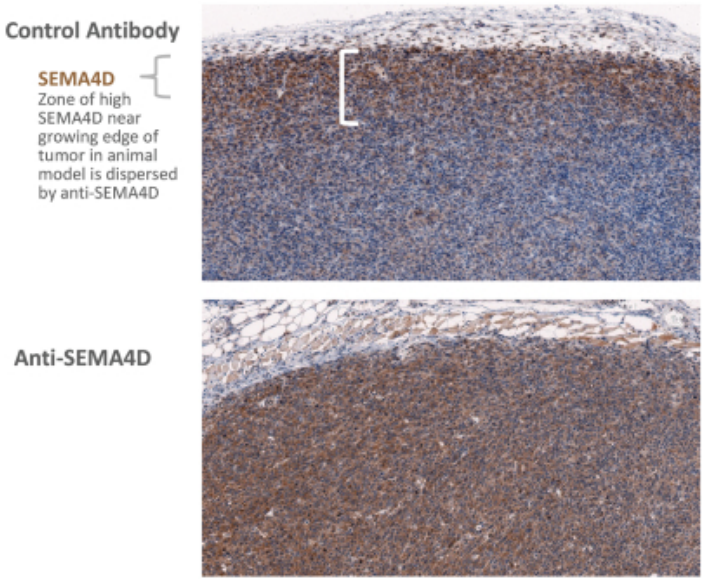
Figure 1. SEMA4D Expression Concentrated at Tumor Growing Edge



Low magnification images show intense SEMA4D staining at the invasive tumor margins (brackets) of colorectal and breast tumors in mice.

In preclinical studies, we have also determined that treating tumor-bearing animals with anti-SEMA4D antibody leads to breakdown of this gradient of SEMA4D expression as shown in Figure 2. This made it possible to determine whether the SEMA4D "barrier" inhibits infiltration of tumoricidal immune precursor cells into tumors.

Figure 2. VX15 Breaks Down SEMA4D Barrier in Colon26 Tumor



As illustrated in Figure 3, treating tumor bearing animals with anti-SEMA4D results in enhanced infiltration of CD8+ T cells into the tumor. Figure 4 shows that this enhanced infiltration results in a statistically significant increase in both the total number of CD3+ T cells and CD8+ T cells and in tumor-specific CTL among tumor-infiltrating lymphocytes, or TIL, recovered from the mice treated with anti-SEMA4D antibody as compared to mice treated with a control antibody.

Figure3. Anti-SEMA4D Antibody Increases Cytotoxic T Cells in Tumor

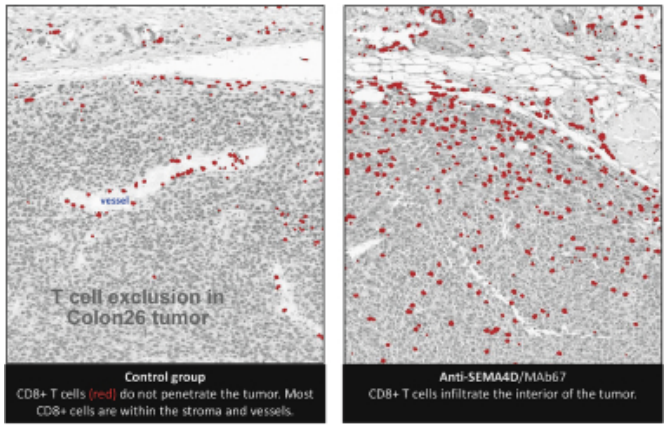
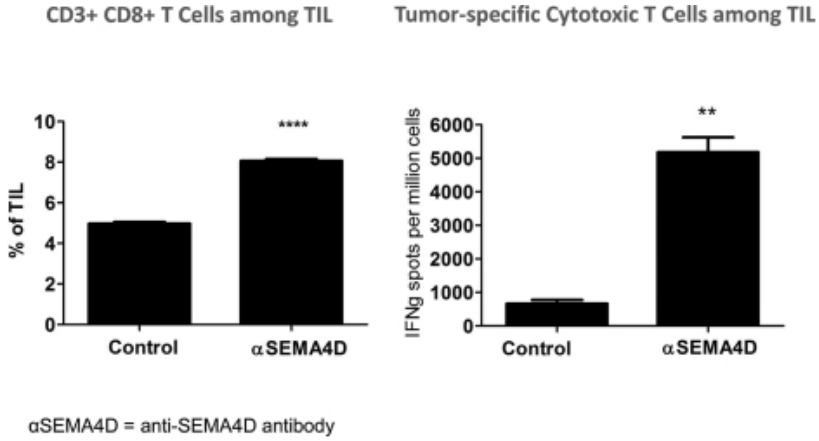


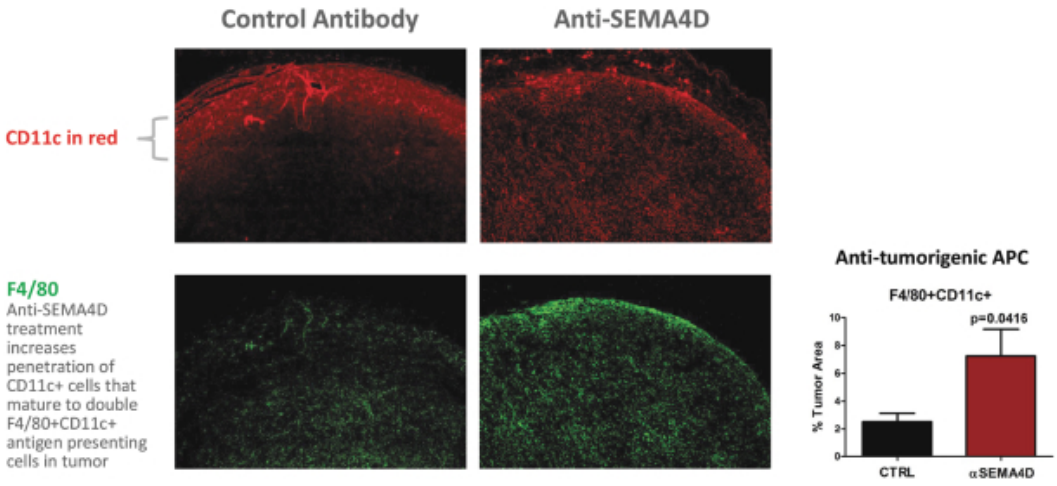
Figure 4. Anti-SEMA4D Antibody Enhances Tumor-specific Cytotoxic TIL



αSEMA4D = anti-SEMA4D antibody

In addition to increased infiltration of T cells, infiltration of other functionally important immune cells, including cells expressing the CD11c marker and the F4/80 marker of antigen presenting cells, or APC, are also increased as illustrated in Figure 5.

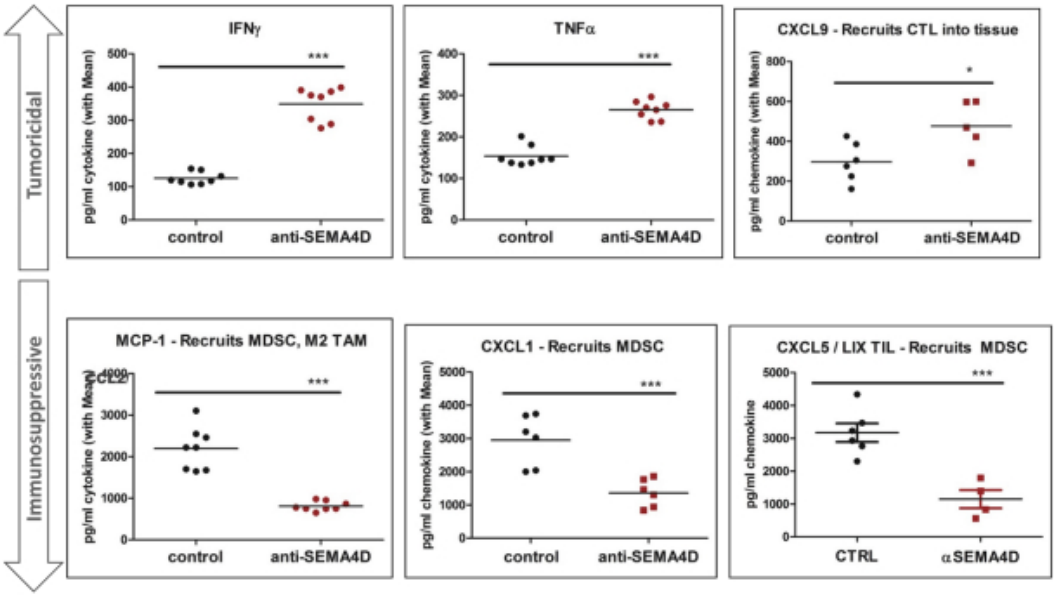
Figure 5. SEMA4D Gradient at Invasive Tumor Margin Regulates Migration and Maturation of Antigen Presenting Cells



Anti-SEMA4D treatment enhances infiltration of pro-inflammatory cells and reduced immunosuppressive cells.

Importantly, as illustrated in Figure 6, the change in cell populations induced by anti-SEMA4D treatment enhances secretion of tumoricidal cytokines (IFNg, TNFa) and chemokines (CXCL9) that recruit activated CTL while simultaneously reducing secretion of molecules that promote infiltration of immunosuppressive cells (MCP-1, CXCL1, CCL17). This results in increased APC and CTL that can give rise to tumoricidal effects and reduces cells such as regulatory T cells, or Treg, Myeloid Derived Suppressor Cells, or MDSC, and M2 type Tumor Associated Macrophage, or TAM, that express the characteristic CD206 marker (Figure 5). Neutralizing SEMA4D with anti-SEMA4D antibody, therefore, results in greater immune infiltration as illustrated in Figures 3, 4 and 5 and has the potential to give rise to greater tumor destruction. This is consistent with the Phase 1 clinical trial of VX15 as a single-agent cancer therapy in patients with solid tumors (e.g., colorectal, breast, lung, renal and bladder cancers) in which patients with higher levels of circulating B and T cells were observed to have longer progression-free survival. We believe the level of circulating B and T cells is a surrogate marker for residual immune competence in these heavily pre-treated patients.

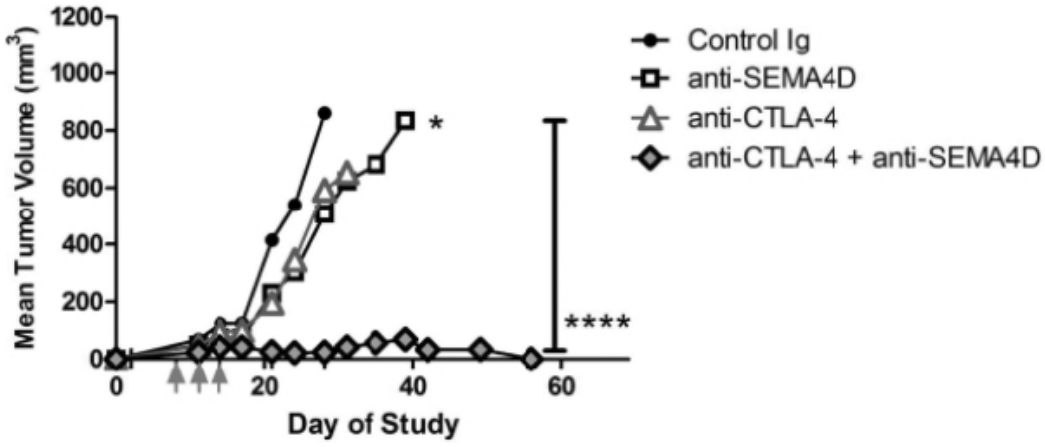
Figure 6. Anti-SEMA4D Treatment Shifts the Balance of Cytokines and Chemokines in the Tumor Microenvironment



Anti-SEMA4D treatment enhances secretion of tumoricidal Th1 cytokines (IFNg, TNFa) and chemokines (CXCL9) that recruit activated cytotoxic T lymphocytes (CTL), while reducing chemokines that promote infiltration of immunosuppressive cells (MCP-1, CXCL1, CCL17).

As illustrated in Figures 7A and B, we have also demonstrated in mouse models of colorectal and head and neck cancer that the VX15 antibody amplifies the benefits of other treatments that increase anti-tumor immunity in peripheral lymphoid tissues, including, in particular, the checkpoint inhibitors anti-CTLA-4 and anti-LAG3. We observed complete tumor regressions in approximately 80% to 100% of mice in five separate preclinical studies in the colorectal tumor model (Figure 7A). We understand this synergy as the combined effect of an agent, anti-CTLA-4, that allows increased expansion of tumor-specific T cells in tumor draining lymph nodes and anti-SEMA4D that increases infiltration of these expanded T cells into tumor. Similar benefits are seen in the head and neck cancer model and in a colon cancer model in combination with anti-LAG3 (Figure 7B).

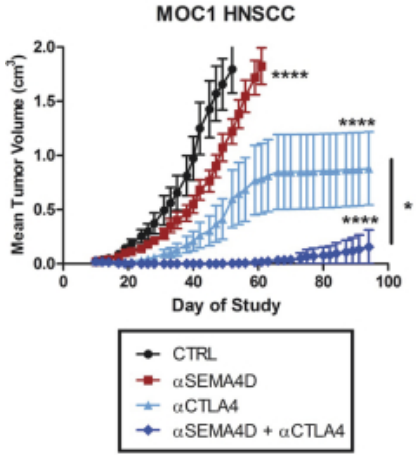
Figure 7A. Combination Treatment with Anti-CTLA-4 and Anti-SEMA4D in a Colorectal Tumor



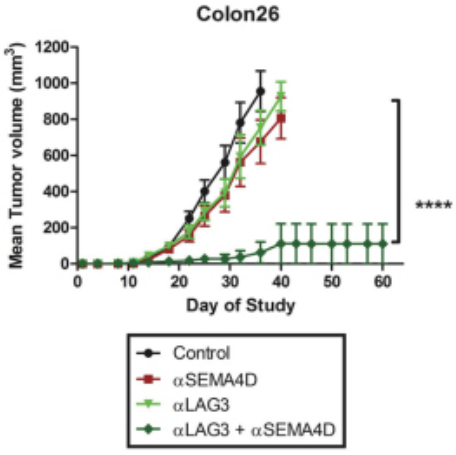
Single agent treatments (anti-SEMA4D and anti-CTLA-4) induce a modest inhibition of tumor growth but act synergistically in combination (anti-CTLA-4 + SEMA4D) to cause tumor regressions.

Figure 7B. Anti-SEMA4D Antibody Enhances Activity of Immune Checkpoint Antibodies: Combination with anti-CTLA-4 and with anti-LAG3 in Preclinical Cancer Models

anti-CTLA-4 Combination with VX15 in Head & Neck Cancer
(collaboration with NIH)



anti-LAG3 Combination with VX15 in Colon Cancer
(collaboration with TESARO)



The Unmet Medical Need for Cancer

Cancer is a leading cause of death worldwide, and according to the World Health Organization it accounted for 8.8 million deaths globally in 2015. Cancer follows only heart disease as the leading killer in the U.S. The American Cancer Society estimates that a total of 15.5 million Americans with a history of cancer were alive as

of January 1, 2016, and this number is expected to grow to 20.3 million by 2026. An estimated 1.7 million Americans will be diagnosed with cancer and 609,640 are expected to die from the disease in 2018.

Analysts estimate that the global cancer immunotherapy market may reach $35 billion in sales, and nearly 60% of oncology patients are expected to use immunotherapies in some form. Such a market penetration would amount to 8 million people in 2014 and an estimated 11 million people in 2020.

Current Approaches to Cancer Treatment

Standard treatment regimens for cancer vary widely by tumor type and location as well as by stage of the cancer, health of the patient and several other factors. Multiple treatment options include surgery, radiation, chemotherapy and administration of other anticancer agents. A cancer patient often receives treatment with a combination of these methods. For patients with localized disease, surgery and radiation therapy are particularly effective. Systemic drug therapies are generally used by physicians in patients who have cancer that has spread beyond the primary site or cannot otherwise be treated through surgery. The goal of these therapies is to damage and kill cancer cells or to interfere with the molecular and cellular processes that control the development, growth and survival of cancer cells. In many cases, drug therapy entails the administration of several different drugs in combination. Over the past several decades, drug therapy has evolved from non-specific drugs that kill both healthy and cancerous cells, to drugs that target specific biological activities related to cancer.

Immunotherapy is one of the most promising therapeutic approaches for cancer because it has the potential to be targeted, is generally lower in toxicity compared to chemotherapy, and can potentially improve survival in end-stage disease. The anti-cancer immune response may lead to the restoration of immune surveillance, which has the potential to contain the metastatic process and limit future relapse or tumor escape. Immunotherapy could bring patients closer to a curative treatment, something that has not been achieved with other targeted oncology therapeutics.

Among the most promising immunotherapy approaches to activating antitumor immunity is the blockade of immune checkpoints. Immune checkpoints refer to inhibitory pathways hardwired into the immune system that are crucial for maintaining and modulating the magnitude and duration of immune responses to minimize collateral tissue damage. Scientists have observed that tumors co-opt certain immune-checkpoint pathways as a major mechanism of immune resistance, particularly against T cells that are specific for tumor antigens and otherwise would attack the tumor. Research has demonstrated that because many of the immune checkpoints are initiated by the interaction between ligands and their specific receptors, many of these immune checkpoints can be readily blocked by antibodies that neutralize ligands or block receptors. Anti-CTLA-4 antibodies are antibodies to the cytotoxic T-lymphocyte-associated antigen 4 and *Yervoy* was the first of this class of immunotherapies to achieve approval by the FDA. Programmed cell death protein 1, or PD-1, is another immune checkpoint pathway currently being targeted with immunotherapies. Merck's anti-PD-1 drug *Keytruda*® (pembrolizumab) is approved for use for the treatment of patients with advanced or unresectable melanoma who are no longer responding to first-line therapy, and *Opdivo* is approved for patients with melanoma who no longer respond to other drugs and for patients with advanced (metastatic) squamous NSCLC with progression on or after platinum-based chemotherapy. *Keytruda* has also received approval as first-line therapy in NSCLC patients with high PD-L1 expression and in May 2017 was approved for use combination with chemotherapy in patients with metastatic nonsquamous NSCLC and as second line therapy in patients with greater than 1% PD-L1 expression. Both *Opdivo* and *Keytruda* have also received approvals for certain populations of patients with squamous cell carcinoma of head and neck, urothelial cancer and Hodgkins lymphoma. Other checkpoint inhibitors targeting PD-L1 have also received approvals for certain patient populations with specific cancer indication: Genentech's *Tecentriq*® (atezolizumab) in urothelial cancer and NSCLC; *Bavencio* in Merkel cell and urothelial cancer; and AstraZeneca's *Imfinzi*® (durvalumab) in urothelial cancer and as maintenance therapy in unresectable Stage III NSCLC following chemoradiation therapy.

Currently, there are several hundred clinical trials of anti-PD-1, the receptor, and anti-PD-L1, the matching ligand, many of which may selectively enroll patients with tumors that express the programmed death ligand 1, or PD-L1, due to a greater expected response rate in such patients than those with PD-L1 negative tumors.

However, even though PD-L1 positive patients respond better than PD-L1 negative patients, the anticipated response rate of PD-L1 positive patients is generally low, at approximately 20%, with the exception of melanoma and bladder cancers, where response rates can be as high as 35% to 40%. Therefore, we believe it is important to identify combination therapies that could result in greater response rates in more tumor types.

Our Approach to a Combination Therapy in Cancer

Preclinical research into VX15 has demonstrated in animal models that expression of SEMA4D by cancerous cells and by other tumor associated immune cells is common to a wide variety of tumor types, and that SEMA4D expression in tumors can enhance tumor growth, survival and metastatic potential. We are pursuing the development of VX15 as a therapeutic for cancer because of its potential to neutralize these effects of SEMA4D.

We believe that the combination of VX15 with immunotherapeutic drugs could prove beneficial. Many immunotherapeutic drugs act by inhibiting negative feedback that limits the magnitude or duration of immune responses, e.g., checkpoint inhibitors such as anti-PD-1, or act by directly inducing greater tumor-specific immune activity, e.g., co-stimulator activities or cancer vaccines. VX15 has a different immunotherapeutic mechanism of action in cancer. It promotes infiltration of immune cells into a tumor and, as such, we believe could enhance the activity of other agents that increases peripheral immune responses. This is the basis for several of our preclinical and clinical collaborations.

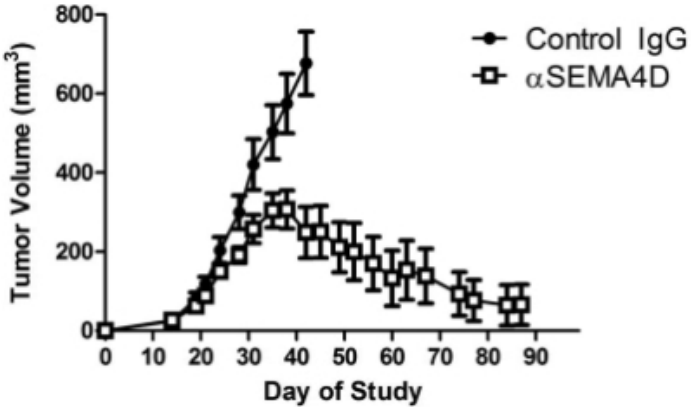
In preclinical studies, we determined that VX15 in combination with the CTLA-4 checkpoint inhibitor can greatly enhance the immune response to tumors by amplifying the benefits of such checkpoint inhibitor. In preclinical tumor models, VX15 demonstrated synergy in combination with anti-CTLA-4 for inhibition of tumor growth and increased frequency of complete tumor regression. Based on our preclinical studies, VX15 removes the barrier presented by SEMA4D to infiltration into the tumor of immune cells expanded by blockade of CTLA-4. VX15 does not itself expand immune response but has a profound influence on the traffic of tumor-specific immune cells and, therefore, the cells' ability to target tumor cells.

Notwithstanding the promise of checkpoint inhibitors, we believe there are still challenges with treatments that are currently approved and in development. The response rate to anti-CTLA-4 is higher in melanoma than in most other tumor types. Combination with VX15 could increase response rates in cancers that respond poorly to checkpoint inhibitors as single agents. Moreover, we believe that the use of VX15 in combination with anti-CTLA-4 can address some of the reported toxicity of high doses of anti-CTLA-4 (at 10 and 3 mg/kg). At the approved dose of 3 mg/kg in metastatic melanoma, *Yervoy* is associated with significant toxicity. We believe that higher doses of anti-CTLA-4 are being administered than would otherwise be required in the presence of the activity of an anti-SEMA4D antibody. We have observed in preclinical models that SEMA4D produced in tumors obstructs infiltration of tumor-inhibiting immune cells into the tumor environment. Clinical studies by Bristol-Myers Squibb have demonstrated that *Yervoy* toxicity is dose related, and, therefore, if it were possible to reduce the dose, then it would be expected that toxicity could be significantly reduced. Our preclinical studies suggest synergy between VX15 and anti-CTLA-4 can be effective at lower doses of anti-CTLA-4 (equivalent to 0.3 or 1.0 mg/kg in humans), potentially resulting in reduced toxicity as well as increased efficacy.

In addition to the immune-mediated mechanism of action of VX15 described above, there is an independent mechanism of action relevant to certain tumors that express both the plexin-B1 receptor for SEMA4D and an oncogenic membrane receptor kinase, ErbB-2 or MET. We and others have shown that the crosslinking of membrane associated PLXNB1 receptors by SEMA4D can transactivate the two oncogenic membrane receptor kinases, ErbB-2 and MET. ErbB-2 is also known as human epidermal growth factor receptor 2, or HER2, the target of the immunotherapy *Herceptin*® (trastuzumab). ErbB-2 and MET membrane receptor kinases are oncogene products, which when transactivated are known to play an important role in the development and progression of certain types of cancers. Both SEMA4D and its PLXNB1 receptor are over-expressed in a wide array of tumor types, such as breast, lung, colorectal, pancreatic, ovarian, head and neck cancer and sarcoma. SEMA4D is also produced by inflammatory cells present in certain tumor microenvironments and has been shown in genetic studies to be a key oncongenic factor in osteosarcoma. As illustrated in Figure 8, we have

demonstrated in animal models in preclinical research that blocking SEMA4D from crosslinking its PLXNB1 receptor by treatment with VX15 induces regression of a PLXNB1/ErbB-2 double positive tumor even when VX15 is administered as a single agent. We believe that this single agent activity may be attributed to VX15's neutralization of SEMA4D to block its interaction with its PLXNB1 receptor and prevent transactivation of ErbB-2 in combination with the immune enhancing effects of VX15. We believe VX15 represents a new potential therapeutic strategy for treatment of HER2+ breast and ovarian cancers either as a single agent or in combination with anti-HER2 antibodies (e.g. trastuzumab).

Figure 8. Treatment of PLXNB1 and ErbB-2 Double Positive Mammary Carcinoma with Anti-SEMA4D Delays Tumor Growth



The single agent efficacy of anti-SEMA4D in a PLXNB1 and ErbB-2 double positive tumor contrasts with the limited single agent efficacy in a colorectal cancer. This may be attributed to the dual effect of anti-SEMA4D in blocking the oncogenic ErbB-2 pathway as well as promoting immune infiltration into the tumor.

Clinical Development of VX15 in Cancer

Early Studies and Preclinical Data

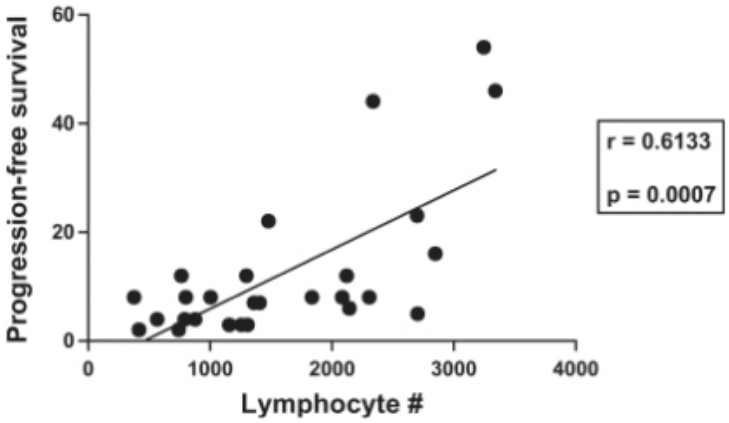
We and others have shown in preclinical studies that SEMA4D protein is highly expressed in the majority of the solid tumors evaluated, including gastrointestinal, head and neck, breast, lung, ovarian, skin, pancreatic, urogenital and sarcoma, including osteosarcoma. The results of these studies reveal that the majority of tumors sampled have moderate to high SEMA4D expression levels. Thus, a potential therapy involving SEMA4D molecule signaling may be applicable to many forms of cancer. We also found that the plexin-B1 receptor, the highest affinity receptor for SEMA4D, was broadly expressed in a range of tumor types.

We conducted preclinical studies evaluating VX15 in conjunction with checkpoint inhibitors similar to the anti-PD-1 antibody nivolumab, and the anti-CTLA-4 antibody ipilimumab. These studies generated preclinical data suggesting that the VX15 antibody can act synergistically with anti-PD-1 and anti-CTLA-4 antibodies. Anti-CTLA-4 is believed to be active in draining lymph nodes of the tumor, where it acts to enhance expansion of tumor-specific T cells, as well as in the tumor environment. Expanded T cells from draining lymph nodes must penetrate into the tumor to be effective. Anti-PD-1 is thought to act predominantly to block interaction between PD-1 positive tumor-associated T cells and tumor cells induced to express the PD-L1 ligand. VX15 has been shown in preclinical studies to promote infiltration of immune cells into a tumor and, as such, we believe that combining VX15 with either of these checkpoint inhibitors could enhance their activity to increase immune responses in tumors.

Completed Phase 1 Clinical Trials

In October 2014, we completed a two-center, open-label, multiple-dose, dose-escalation, non-randomized, Phase 1 safety and tolerability clinical trial of intravenous VX15 in adult patients with advanced solid tumors, such as colorectal, breast, lung, renal and bladder cancers. As illustrated in Figure 9, it was observed that some patients had relatively greater benefit from VX15 treatment as demonstrated by extended progression-free survival. This was directly correlated to the level of circulating immune cells, a surrogate marker of immune competence. This is consistent with our understanding of the immune-mediated mechanism of action of VX15, which enhances immune cell traffic and tumor infiltration but does not alone increase the level of circulating immune cells. Our scientific rationale for combining VX15 with an immunomodulatory therapy is to increase the number of patients who have a sufficiently strong immune response that they can benefit from the ability of VX15 to direct these immune cells into the tumor.

Figure 9. Correlation of Immune Cell Number versus Duration of Progression-Free Survival.



The observed increase in progression-free survival of treatment with VX15 is thought to be due to enhancing the efficacy of patients' immune activity.

In October 2014, we reported final results of our Phase 1 clinical trial of VX15 in patients with solid tumors. In this clinical trial, 460 doses of VX15 were administered to 42 patients as weekly intravenous infusions at concentrations ranging from 0.3 to 20 mg/kg. VX15 was well tolerated through 20 mg/kg, the highest dose tested. As noted above, the clinical trial results also gave some early evidence of immune-mediated activity. Patients with elevated levels of circulating lymphocytes were observed to have had longer progression-free survival when treated with VX15, and one of these patients had a partial response with tumor shrinkage. There were 15 serious adverse events in 12 patients all of which were unrelated to the treatment as determined by independent review. One pancreatic cancer patient developed a dose-limiting toxicity, or DLT, involving elevated liver enzymes concurrent with disease progression (metastasis to liver). The most frequent treatment-related adverse events included grade 1/2 nausea and fatigue.

VX15's safety and tolerability profile was also supported in a separate Phase 1 clinical trial of single-ascending doses up to 20 mg/kg in 50 patients with MS in which no dose-limiting toxicities were observed. Furthermore, in both short and longer term preclinical animal toxicology studies in monkeys and rodents, the safety and tolerability of VX15 was demonstrated at weekly doses up to 200 mg/kg administered over six months.

Ongoing and Planned Phase 1b/2 Clinical Trials

Non-Small Cell Lung Cancer (NSCLC)

Based on safety data obtained in a Phase 1 clinical trial with VX15 as a monotherapy, we initiated the CLASSICAL–Lung clinical trial in NSCLC patients who have not previously been treated with immunotherapy to evaluate VX15 as a combination therapy with avelumab, a checkpoint inhibitor targeting the PD-1/PD-L1 blocking pathway. Merck KGaA will share in the cost and data generated in this study but will not receive a license to manufacture or sell VX15. The CLASSICAL–Lung clinical trial has an open-label design, and there is potential for informative data in the fourth quarter of 2018. Top-line data from this clinical trial are anticipated in 2019.

Osteosarcoma

In February 2018, COG with financial support of the NCI initiated a Phase 1 clinical trial of VX15 as a single agent in pediatric patients with recurrent, relapsed, or refractory solid tumors, including osteosarcoma. This study is based on the finding that SEMA4D is a key oncogenic factor in this type of cancer.

Melanoma

In the second quarter of 2018, an IST of VX15 in combination with *Yervoy* and in combination with *Opdivo* is expected to begin at UCLA's Jonsson Comprehensive Cancer Center in patients with advanced melanoma who have progressed on prior anti- PD-1/PD-L1 based therapies.

VX15 in Huntington's Disease

Overview

We are studying VX15 as a treatment for Huntington's disease, which is a neurodegenerative genetic disorder that typically manifests in mid-adult life. Our study of VX15 in Huntington's disease is based on our prior research of neurodegenerative disease mechanisms, where we demonstrated in preclinical models that SEMA4D triggers activation of both microglia and astrocytes, the innate inflammatory cells of the CNS, and that such activation can be reduced or prevented by treatment with VX15. The chronic activation of microglia and astrocytes has been implicated as an important disease mechanism in Huntington's disease, progressive MS, and other neurodegenerative disorders. The FDA has granted both orphan drug designation and Fast Track designation to VX15 for Huntington's disease.

We completed a Phase 1 dose-escalation clinical trial of VX15 in MS patients in November 2014. We initiated the Phase 2 SIGNAL study of VX15 in early-stage and prodromal Huntington's disease patients in July 2015 to assess the safety, tolerability, pharmacokinetics and efficacy of intravenously administered VX15.

The Role of SEMA4D in Neurodegenerative Disease

SEMA4D plays a crucial role in neuroinflammatory and neurodegenerative diseases through at least three independent mechanisms: (i) inducing the activation of innate inflammatory cells of the CNS, including both microglia and astrocytes, which are associated with long term damage to nervous tissue; (ii) inhibiting migration and differentiation of precursor cells that have the ability to repair demyelinated lesions; and (iii) inducing the breakdown of the tight junctions between endothelial cells that seal the blood-brain barrier and prevent degradation of the cellular and molecular environment of the brain.

Chronic activation of microglia is associated with neuroinflammatory and neurodegenerative disease. We have demonstrated in preclinical studies that SEMA4D activates microglia at the site of demyelinated lesions. We have also demonstrated that SEMA4D inhibits the migration of oligodendrocyte precursor cells, which are capable of repairing damage to demyelinated lesions.

As demonstrated in Figure 10, spinal cord sections were stained for expression of a characteristic marker of oligodendrocyte precursor cells known as NKx2.2. It was observed that oligodendrocyte precursor cells are randomly distributed and do not migrate to the site of demyelinated lesion in control animals (red stained cells in left panel) and are, therefore, unable to repair damage. SEMA4D appears to inhibit migration of these precursors because they migrate when animals are treated with VX15 (right panel). In contrast, SEMA4D promotes activation of microglia at the site of lesions. We have also demonstrated in preclinical models that the activation of microglia is mediated by SEMA4D because activation is inhibited upon treatment with VX15. As illustrated below, in Figures 10 and 11, the left panel represents sections of spinal cord from animals treated with control antibody and the right panel represents similar sections from animals treated with VX15. In Figure 10, the sections are stained for NKx2.2 (red), a marker of oligodendrocyte precursors, while in Figure 11, the sections are stained for Iba1 (brown), a marker of microglial activation.

Figure 10. VX15 Promotes Migration of Oligodendrocyte Precursor Cells

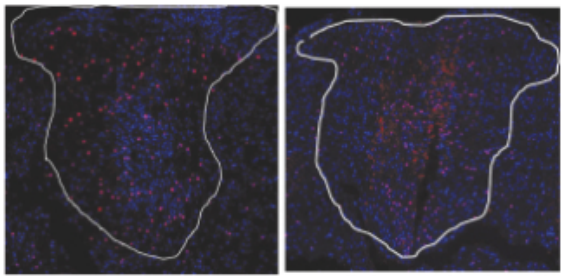
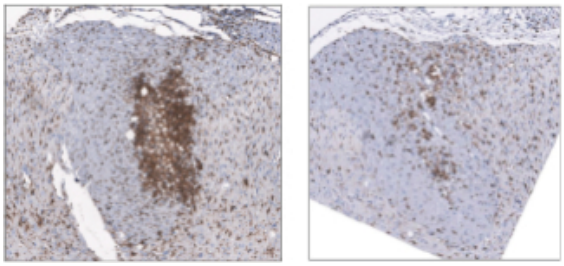


Figure 11. VX15 Inhibits Activation of Microglia



In addition to microglia, the second major type of innate inflammatory cells of the CNS is the astrocyte. Astrocytes comprise approximately half the cells of the brain. A single astrocyte makes numerous connections to other cells through cytoplasmic extensions. These connections allow astrocytes to provide trophic support in the form of growth factors and nutrients to neurons and other brain cells. Among other important astrocyte functions, the interaction of astrocytes with endothelial cells is required to induce tight junctions and form the blood-brain barrier. The blood vessels that feed the brain are covered with a specialized extension of the astrocyte. In addition, astrocytes are responsible for reabsorbing approximately 80% of the free excitatory transmitter, typically glutamate, released at nerve synapses. This is believed to be an important function to reduce the danger of excitotoxicity induced by high concentrations of excitatory transmitter that can lead to loss of function and degeneration of post-synaptic neurons. Astrocyte activation is common to a number of different neurodegenerative diseases, including Huntington’s disease and progressive MS. When astrocytes are activated, their cytoskeletons partially collapse and they lose cell contacts. This can cause loss of trophic support and increased concentrations of excitotoxic transmitters leading to neurodegenerative effects. We observed that astrocytes express high levels of receptors for SEMA4D. To determine the effect of SEMA4D signaling on astrocytes, we isolated purified rat astrocytes in culture and investigated the effect of adding recombinant SEMA4D. Quantitative measure of the level of polymerized actin, or F-actin, demonstrated that SEMA4D

signaling through receptors on astrocytes results in a statistically significant loss of F-actin, which in turn results in partial collapse of cytoskeleton and corresponding loss of cell contacts. We have therefore concluded that SEMA4D is an important factor for activation of both astrocytes and microglia.

The Unmet Medical Need for Huntington's Disease

Huntington's disease is a neurodegenerative genetic disorder that typically manifests in mid-adult life. People with Huntington's disease experience profound neurodegeneration predominantly in the basal ganglia and cortex, which are brain areas critically involved in motor control and cognitive function. Individuals afflicted with Huntington's disease develop involuntary movements, known as chorea, as well as significant cognitive and psychiatric problems. The gene inheritance is based on a single mutated autosomal dominant gene. Therefore, an individual with one mutated copy of the gene inherited from either parent will develop the disease. In general, if an individual has the disease, each of his or her children is at 50% risk of inheritance. The disease often manifests in mid-adult life, and as a result, an individual may have already raised a family and unwittingly passed on the mutated gene prior to diagnosis. Thus, each diagnosis may affect more than just one person with devastating impact on the family. To date, treatment is largely directed towards management of symptoms and improving quality of life without much potential for disease modification.

Individuals at risk of Huntington's disease can be identified by a simple genetic test. There is, therefore, an opportunity for preventative therapy in this devastating inherited disease. We believe a therapeutic that can promote remyelination and repair of damaged nerves and protect against breakdown of the blood-brain barrier while simultaneously reducing inflammation would represent a powerful and comprehensive approach toward preventing or delaying disease onset.

There is no known cure for Huntington's disease. According to the Huntington's Disease Society of America, there are over 30,000 people in the United States who have been clinically diagnosed with Huntington's disease and an additional 250,000 people that are at risk of inheriting the mutated Huntington's disease allele from their parents. Less than 5% of at-risk individuals pursue predictive genetic testing, due to a lack of effective treatments. However, because there is a 50% chance of inheriting the mutated allele, roughly 125,000 people from the at-risk pool will ultimately develop Huntington's disease. The development of a disease-modifying therapy could encourage at-risk patients to seek out testing.

Current Approaches to the Treatment of Huntington's Disease

Despite extensive medical research into the pathogenesis of Huntington's disease, little progress has been made in developing disease-modifying treatment. Treatment is mainly limited to palliative measures, which evolve as the disease advances. Sometimes, medications to treat some symptoms generate side effects that worsen other symptoms, which complicate the overall treatment regimen and necessitates regular reviews of medications by physicians and updates to the treatment protocol.

To treat movement disorders, clinicians often prescribe antichoreic drugs, such as tetrabenazine or Teva's *Austedo*® (deutetrabenazine), or neuroleptics. Tetrabenazine and *Austedo* are specifically approved by the FDA to reduce the involuntary jerking and writhing movements associated with Huntington's disease. However, tetrabenazine carries serious side effects, including worsening or triggering depression, insomnia, drowsiness, nausea and restlessness. *Austedo*, a deuterated form of the drug, was approved in April 2017 and may have reduced side effects. Commonly used neuroleptics include *Haldol*® (haloperidol) and clozapine, which can suppress unwanted movements but can also worsen involuntary contractions and muscle rigidity. Other drugs prescribed to alleviate motor symptoms include anti-seizure medications such as *Klonopin*® (clonazepam) and anti-anxiety drugs like *Valium*® (diazepam), although these drugs alter consciousness and carry risks of dependence and abuse.

For psychiatric symptoms, clinicians prescribe antidepressants, antipsychotics, or mood-stabilizing drugs depending on the severity and particular constellation of symptoms for each patient. The antidepressants

commonly used in treating Huntington's disease patients are serotonin reuptake inhibitors, such as *Lexapro*® (escitalopram), *Prozac*® (fluoxetine), or *Zoloft*® (sertraline). Antipsychotics may also be used to suppress violent outbursts, agitation, and other symptoms of mood disorders or psychosis. Mood-stabilizing drugs can treat bipolar symptoms when they are present, including lithium and anticonvulsants, such as valproic acid and lamotrigine. These drugs can cause weight gain, tremors, or gastrointestinal symptoms. To supplement medications, psychotherapy can help Huntington's disease patients cope and manage behavioral problems while also fostering communication with family members.

Our Approach to Huntington's Disease

We are studying VX15 for the treatment of early-stage Huntington's disease as well as preventative treatment of prodromal (pre-manifest) subjects, a target population of individuals who have not yet reached the point of clinical diagnosis but are known to carry the dominant Huntington's disease mutation. We believe SEMA4D impacts the pathology of Huntington's disease through multiple mechanisms, making SEMA4D a promising target for therapeutic development in this disease. Our primary goal is to develop a treatment that will prevent or delay the progress of, or reduce the symptoms of, the disease in early manifest patients. In patients with prodromal disease, we will seek to prevent or delay disease onset and will employ clinically validated biomarkers as endpoints in our Phase 2 clinical trial because diagnostic endpoints are not available for preventative therapy. The potential biomarkers include imaging markers, cognitive tests and quantitative motor assessments that have been shown in two large observational studies to progress, including during the 10 years just prior to disease onset. The FDA standard for an approvable biomarker is that the biomarker should be "reasonably likely to predict clinical benefit." We believe that an effective way to meet this standard for the prodromal population would be to demonstrate that clinical outcomes are correlated with a biomarker in manifest disease and that the same biomarker is associated with treatment in pre-manifest disease. It is for this reason that our Phase 2 SIGNAL study in Huntington's disease includes assessments of both clinical/functional endpoints and imaging biomarkers in both the early manifest and late prodromal populations.

Investigators have developed an algorithm that relates the projected age of disease onset directly to the age of a patient and inversely to the length of the mutation in the *Huntingtin* gene. It is, therefore, possible to initiate preventative therapy during a span of years that are expected to precede disease diagnosis and during which time we believe the available biomarkers may undergo meaningful changes in the prodromal population.

Clinical Development of VX15 in Neurodegenerative Indications

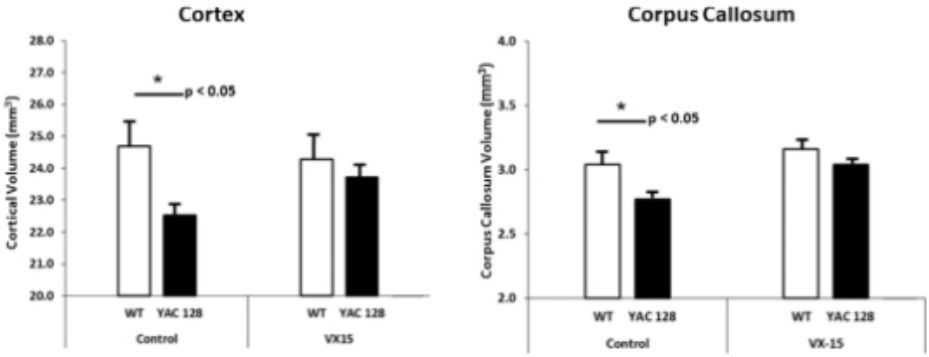
Early Studies and Preclinical Data

We have conducted preclinical studies evaluating the VX15 antibody as a therapeutic agent for multiple neurological indications. We examined VX15 in a transgenic mouse model of Huntington's disease, finding that weekly VX15 administration prevented brain degeneration in areas affected by Huntington's disease. VX15-treated mice also exhibited improvements in a range of behavioral and cognitive tests, but not motor tests. We also examined changes induced by VX15 in a mouse model of MS, observing substantial reductions in neuroinflammatory processes and a sparing of myelin degradation. These preclinical results were important proof-of-concept steps necessary to move forward with clinical trials in multiple neurological indications.

Huntington's disease is based on a single mutated gene, and there are transgenic animals that express this gene and reproduce many of the characteristics of the human disease. We and our academic collaborators evaluated the VX15 antibody as a potential preventative therapy for Huntington's disease patients in the yeast artificial chromosome, or YAC, transgenic mouse model that expresses full-length mutated human *Huntingtin* gene, or YAC128, and reproduces many of the characteristic signs and symptoms of Huntington's disease. Starting at six weeks of age, YAC128 and normal wild type, or WT, control mice received either VX15 or isotype-control antibodies weekly for 47 weeks. Before the mice reached 12 months of age, behavioral assessments and tissue analyses were performed to determine any benefits from treatment with the VX15 antibody. As illustrated below in Figure 12, the results demonstrated a significant reduction in the loss of cortical

and white matter volume in the brain of the transgenic animals. Loss of brain volume is a characteristic neuropathology in these animals that is also observed in both Huntington's disease and progressive MS patients.

Figure 12. VX15 Treatment Significantly Inhibits Cortical and Corpus Callosum Degeneration in Brains of YAC128 Mice

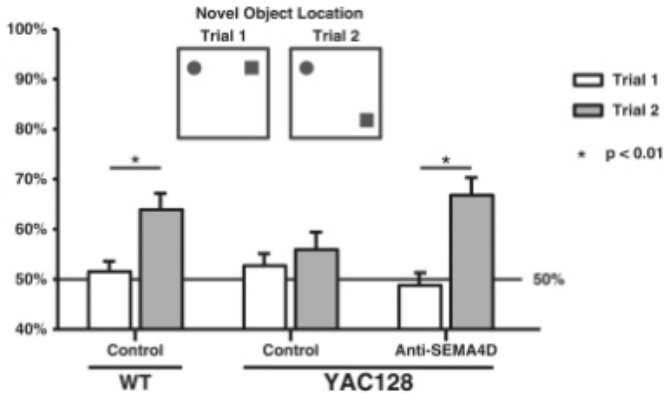


Cortical (grey matter) volume and Corpus Callosum (white matter) volume were determined in transgenic (YAC128) and WT control mice that had been treated with either control or VX15 antibody from six weeks of age until sacrifice at 12 months. Open bars are normal mice, closed bars are YAC128 mutant mice.

The mice were evaluated in an open-field activity test, which measures the presence of anxiety-like behavior as reflected in their tendency to avoid open space in the center of their cage. Control YAC128 transgenic mice had both a significantly reduced number of entries into the center and spent less time in the center. VX15-treated YAC128 mice had no significant difference in center entries from WT control mice, suggesting that VX15 can reduce anxiety-like behavior. The study found similar results using total time spent in the cage center as its behavioral measure.

In another cognitive test, investigators found that VX15 antibody treatment improved spatial memory in a novel object location test in the YAC128 mouse model of Huntington's disease. Mice are naturally curious and if an object is placed in their cage, they will investigate it through nose probes, or "sniffing." As demonstrated in Trial 1 in Figure 13, if two different shaped objects are placed at one end of the cage, they investigate both equally because both objects are novel. As demonstrated in Trial 2 in Figure 13, if the mouse is removed and one of the objects is relocated to the opposite end of the cage, then when the same mouse is reintroduced, it will preferentially investigate the object in the now novel location. This is illustrated in the WT control group of Figure 13, where the ratio of investigating the two different objects is represented by the white bars for Trial 1 and by the grey bars for Trial 2. However, as illustrated in YAC128 control group, if this same sequence of trials is performed with YAC128 mice, the ratio of investigating the two different objects is indistinguishable in Trial 1 and Trial 2. This suggests that these mice do not remember which location is old and which location is novel. In contrast, as illustrated in YAC128 anti-SEMA4D group, if YAC128 mice have been treated with VX15, then these mice show a memory trial performance indistinguishable from WT control mice. The data suggest that VX15 may improve the working spatial memory deficits that are found in some neurological disorders such as Huntington's disease and Alzheimer's disease.

Figure 13. VX15 May Improve Spatial Memory in the YAC128 Mouse Model



Control WT mice preferentially explore an object in a novel location, while untreated YAC128 mice do not. Treatment of YAC128 with VX15 antibody preserved this WT behavior.

Completed Phase 1 Clinical Trial

The safety and tolerability of VX15 was initially assessed in a Phase 1 dose-escalation clinical trial in MS patients. In November 2014, we completed a multi-center, double-blind, placebo controlled, single-ascending dose Phase 1 safety and tolerability clinical trial of intravenous VX15 in 50 adult patients with MS. VX15 was well tolerated in this Phase 1 clinical trial. No dose-limiting toxicity was found in five cohorts with doses ranging from 1 to 20 mg/kg. Only one serious adverse event has been reported and was deemed unrelated to the study treatment. This clinical trial provided safety data that will help support development in Huntington's disease and other degenerative diseases, including MS. This same clinical trial also provided quantitative data that allowed us to estimate the half-life of the VX15 antibody in patients as approximately 20 days. We believe this extended half-life will allow us to treat subjects once a month. This is desirable because prodromal subjects with active work lives would not wish to disrupt their schedule with clinic visits that are more frequent than once a month. We selected Huntington's disease as our initial indication for VX15 because of the unmet need in the indication, as well as well-characterized natural history and biomarkers, and nearly 100% diagnostic precision based on presence of mutations. The data from the Phase 1 MS safety clinical trial has contributed to the safety database to enable initiation of a Phase 2 clinical trial in Huntington's disease.

Phase 2 Clinical Trial

Our SIGNAL study is designed to assess the safety and efficacy of VX15 in early-stage and prodromal Huntington's disease patients. The SIGNAL study is a randomized, double-blind, placebo-controlled Phase 2 clinical trial evaluating the safety, tolerability, pharmacokinetics, and efficacy of intravenously administered VX15. We initiated the clinical trial in July 2015. We engaged a contract research organization specializing in Huntington's disease, HSG, to assist in site selection and trial management. Our clinical trial is structured as an adaptive design with an initial Cohort A of 36 patients treated monthly for six months with either VX15 or placebo in a 1:1 ratio. At the end of six months, the placebo group crossed over to VX15 so that all subjects were treated with drug until month 12. Enrollment in a second cohort, Cohort B, was initiated starting immediately following enrollment of Cohort A, and 82 of a planned 200 patients have now been enrolled. Patients in Cohort B will be treated monthly with either VX15 or placebo in a 1:1 ratio for a duration of 18 months based on the size effect of treatment observed in Cohort A. Endpoints for this clinical trial include a cognitive assessment battery, HD-CAB, and a quantitative motor assessment battery, Q-Motor, each developed for Huntington's disease, as well as imaging by MRI and PET in a subset of patients. Two PET ligands will be employed: FDG-PET, which is

expected to reflect effects on astrocyte activation, and TSPO-PET (PBR28), which is expected to reflect effects on microglial activation. These measures may provide confirmation of target engagement for two key mechanisms of action of VX15. The estimated primary completion date, which is the date on which the last participant in a clinical study was examined or received an intervention to collect final data for the primary outcome measure, for the SIGNAL study is May 2020.

Figure 14 shows graphical representations of changes in MRI volume as a percentage of baseline over the full 11 month treatment period for the regions of frontal and parietal lobes that showed the largest consistent treatment effects. The VX15-treated group (blue line) appears to be stabilized relative to the loss of MRI volume observed in the first six months by the placebo group (red line), which also appears to stabilize following cross-over to VX15 at the end of six months. The data indicate that the delayed start does not catch up with early treatment in terms of preservation of MRI volume within this time frame, suggesting a benefit to early treatment and the possibility of a disease modifying rather than a transient symptomatic effect.

Figure 14. MRI: Mean Change from Baseline in Regions of Frontal and Parietal Cortex
VX15 Treatment vs. Placebo

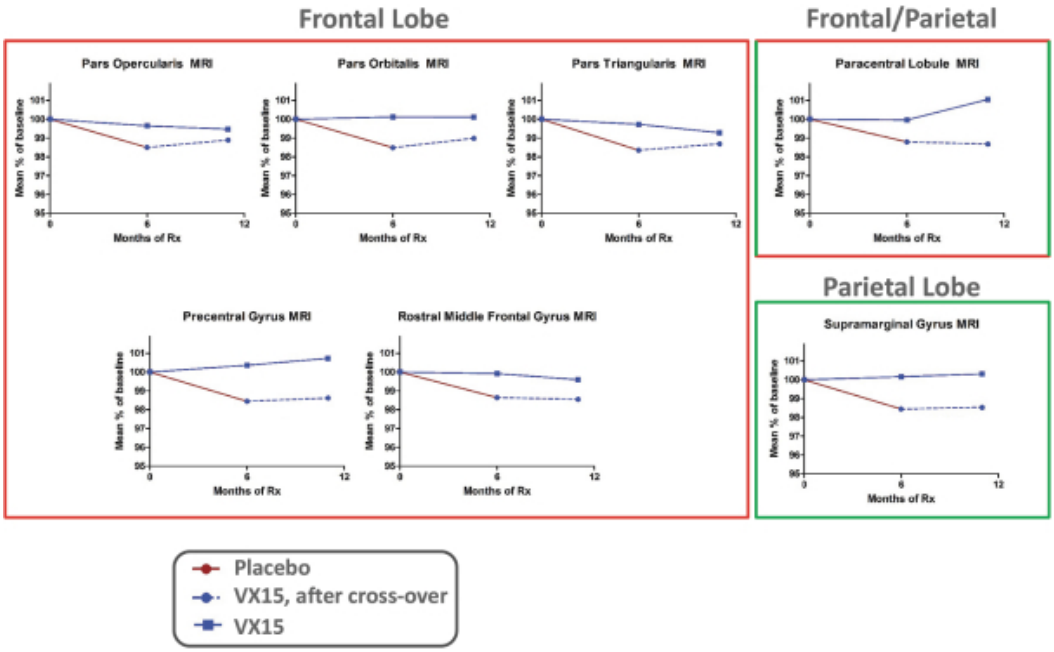
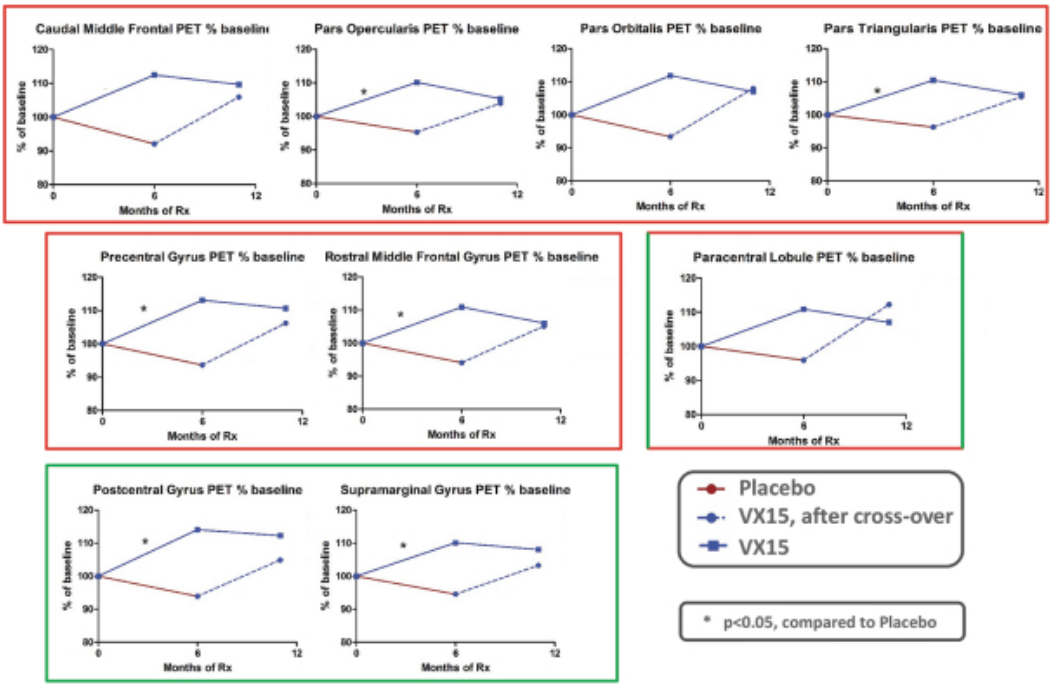


Figure 15 shows graphical representations of changes in FDG-PET signal as a percentage of baseline over the full 11-month treatment period for the regions of frontal and parietal lobes that showed the largest consistent treatment effects. The VX15-treated group (blue line) shows an initial increase in metabolic activity (FDG-PET signal) during the first six months, followed by the more stabilizing effect of continuing treatment relative to the loss of metabolic activity observed in the first six months of the placebo group (red line). The placebo group also shows a sharp increase in metabolic activity following cross-over to VX15 at the end of six months.

Figure 15. FDG-PET: Mean Change from Baseline in Regions of Frontal and Parietal Cortex
VX15 Treatment vs. Placebo



The observed statistically significant changes in FDG-PET uptake and a consistent trend of increase in volumetric MRI in multiple cortical regions are encouraging treatment effects of VX15. It is reasonable to expect that the strength and significance of these signals could be enhanced in the larger ongoing Cohort B study with treatment duration increased to 18 months without crossover. While neuronal loss in neurodegenerative diseases like Huntington's may be largely irreversible, it is hoped that other important elements of neurological activity, in particular glial cells and synapses, may be replenished or repaired with significant impact on disease progression.

Our ActivMAb Antibody Discovery Platform

Overview

ActivMAb is a proprietary human antibody discovery platform based on a novel method for expressing large and diverse libraries of high affinity, full-length human monoclonal antibodies on the surface of the vaccinia virus. The vaccinia virus is a mammalian virus that enables synthesis and selection of fully human monoclonal antibodies in mammalian cells where they undergo the post-translational modifications that distinguish mammalian cells from either bacteria or yeast. We believe our ActivMAb technology offers several advantages over selection platforms that utilize bacterial or yeast expression vectors:

- rapid generation of high affinity, full-length, human monoclonal antibodies synthesized and naturally modified in mammalian cells;
- expression and selection of antibodies that easily and predictably transition to manufacturing in mammalian lines; and

- efficient selection of antibodies against multi-pass membrane proteins, an important class of pharmaceutical targets.

By leveraging the advantages of our ActivMAb platform over alternative bacterial and yeast-based technologies, we believe we can build a significant pipeline of therapeutics antibodies in multiple disease indications through both our own internal discovery efforts and through collaborations. Our product candidate VX5 was generated by our ActivMAb platform, and is a high-affinity, human IgG1 antibody to CXCL13, a chemokine that induces development of lymphoid tissue. VX5 has initiated IND-directed development for the treatment of autoimmune disorders.

Our Approach to Antibody Discovery

Our ActivMAb platform uses a novel method for synthesizing and naturally modifying fully human monoclonal antibodies on the surface of the vaccinia virus. Traditionally, the most common methods for selecting fully human antibodies have been through immunization of immunoglobulin transgenic mice, which has the disadvantage of tolerance to the many target determinants that are common to both mice and humans (approximately 90%), or through use of in vitro libraries synthesized and expressed in either bacterial or yeast cultures. While library-based methods of antibody selection avoid the problem of tolerance, the selected antibodies are synthesized in an environment that differs from the mammalian cells in which they will ultimately be manufactured and their properties in that environment are not always predictable. By expressing antibodies on a virus that infects mammalian cells, our antibodies undergo the normal range of modifications characteristic of such cells. We believe that these antibodies can more predictably transition to manufacturing in mammalian cell lines that are commonly used to produce commercial quantities of therapeutic antibodies.

Monoclonal antibodies were first produced in mice and although these were relatively easy to generate, mouse antibodies have significant drawbacks as targeted therapeutics in patients. The major drawback is that a mouse monoclonal antibody is recognized by the human immune system as a foreign target and therefore, the immune system attacks the antibody, rendering it useless against its intended target. Many advances have been made to genetically engineer and humanize monoclonal antibodies. In addition, full-length human antibodies can be created employing a limited number of alternative technologies, such as our ActivMAb platform.

Our ActivMAb platform allows for inclusion of complementary DNA, or cDNAs, of interest in recombinant vaccinia viruses and enables high-throughput screening of antibodies with desirable properties that are expressed on the viral surface. The vaccinia virus is an enveloped virus, which means that its protein capsid is protected by a cell membrane. The viral envelope typically expresses several viral surface glycoproteins, which are key components that define how the virus interacts with its host organism. These viruses have been engineered to efficiently express full-length IgG antibodies on the envelope surface permitting for recognition of desired target antigens. In effect, the technology enables the equivalent of phage display in mammalian cells. This has the dual advantage of allowing expression of full-length functional antibodies and reflecting the post-translational modifications of protein expression that distinguish mammalian cells from bacteria and yeast. The platform can aid in *de novo* antibody selection, optimization of antibody affinity, or conversion of a non-human antibody into a panel of fully human antibodies.

We believe antibodies selected for development through ActivMAb will be efficiently expressed because both discovery and eventual clinical and commercial manufacturing are in similar types of mammalian cells.

Importantly, our technology also allows multi-pass membrane proteins to be expressed on the vaccinia virus envelope, a setting in which very few other proteins are expressed but which supports the natural configuration of such targets. This makes it possible to efficiently select antibodies against this important class of pharmaceutical targets without the complication of numerous false positives that would occur in their normal setting of a naturally complex cell membrane.

VX5 for Autoimmune Disease

VX5 is our first product candidate generated from our ActivMAb platform. VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissues, and has initiated IND-directed development for the treatment of autoimmune disorders.

During a normal immune response, the interaction of CXCL13 and its receptor CXCR5 on B cells and follicular helper T cells directs those cells to primary follicles in lymph nodes and the spleen, and induces germinal center formation and lymphoid organogenesis. In a chronically inflamed environment, ectopic lymphoid follicles form within affected tissues. Over-expression of CXCL13 in these tertiary lymphoid organs, accompanied by deregulation of regulatory interactions among immune cells, enables survival of autoreactive B cells and the generation of high affinity antibodies that contribute to development of autoimmune diseases, such as rheumatoid arthritis and MS.

In preclinical studies, anti-CXCL13 antibodies such as VX5 have been shown to prevent CXCL13 from interacting with its CXCR5 receptor, resulting in interference with B cell and T helper cell migration into inflamed tissues and ultimately the reduction of inflammatory and autoimmune responses. Therapeutic administration of anti-CXCL13 has been demonstrated to prevent disease progression in mouse models of rheumatoid arthritis and MS.

Discovery Collaborations with Third Parties

General Terms of Master Agreements

We have offered the ActivMAb platform as a discovery tool to third parties since 2014. We enter into separate master agreements with each client that generally provide for one or more target molecules for antibody selection. The client provides sufficient quantities of antigens for use in each program, and we use our ActivMAb platform to select human monoclonal antibodies against the antigen that substantially comply with the applicable program requirements set forth in the master agreement. Pursuant to each agreement, we may receive a technology access fee and research payments and are eligible to receive a success fee.

Following our delivery of a selected antibody, the client will obtain a non-exclusive, worldwide, royalty-free, limited-purpose license to use the selected antibody for research and testing purposes. Additionally, each client generally has an exclusive option to obtain an exclusive product license to develop and commercialize each selected antibody. If the client enters into a product license with respect to a particular antibody, it may, in the case of a proprietary target or in consideration for certain payments, preclude us, for a certain time period, from undertaking or performing any activities, services or programs to identify or develop any antibodies to an antigen that is the subject of the product license.

Pursuant to these agreements, we will own (i) all inventions and know-how discovered, developed, made, conceived or generated in the course of or as a direct result of the activities conducted under a discovery program that relate to the construction of immunoglobulin gene libraries or the process for the selection of monoclonal antibodies from such libraries and (ii) any and all antibodies generated under the discovery programs.

In addition to an upfront technology access fee, we are generally eligible to receive additional research support and performance payments with respect to each discovery program under the master agreement. In addition, if the client exercises its option to obtain an exclusive product license to develop and commercialize selected antibodies, we would be eligible to receive milestone payments and low single-digit royalties on future net sales of products commercialized by client.

Multi-Pass Membrane Protein Research

A novel recent development of the Vaccinex ActivMAb platform is the ability to efficiently select antibodies against multi-pass membrane proteins. Multi-pass membrane proteins, which constitute the largest and

most diverse group of membrane receptors in eukaryotes, are an important class of targets for pharmaceutical products. Many small molecule drugs target multi-pass membrane proteins, but it has been difficult to select antibodies against them because natural cellular membranes are a complex environment with many different proteins and specific multi-pass proteins cannot be purified away from the membrane without denaturing. We have entered into multiple collaboration agreements with respect to this class of pharmaceutical targets. For example, in September 2017, we entered into a research agreement with Merck to demonstrate functional expression of two different multi-pass membrane proteins on the vaccinia envelope as a proof of concept study in anticipation of a separate agreement on an antibody discovery campaign. In addition, in November 2017, we entered into an agreement with Surface to select an antibody against two target antigens, including an undisclosed human multi-pass membrane protein.

Catalent Pharma Solutions

In October 2017, we entered into an agreement with Catalent to select an antibody to a cancer membrane target suitable for construction of an antibody drug conjugate, or ADC, employing proprietary Catalent technology. Pursuant to the agreement, we will license a Vaccinex-optimized antibody candidate to Catalent for construction of the ADC, testing for efficacy in an animal tumor model, and manufacture for evaluation of tolerability in rodents and cynmologous monkeys. The ADC will be jointly owned by us and Catalent. We have agreed pursuant to the agreement to discuss in good faith a business relationship to promote and market the ADC.

We believe that other biotechnology or pharmaceutical companies may be interested in the opportunity to efficiently select and express specific antibodies required for drug development against novel target antigens. As collaborations with our ActivMAb platform progress, we will seek to increase our economic return and explore opportunities to enter into discovery and co-development arrangements.

Our NKT Vaccine Platform

Our NKT vaccine platform uses agonists that we and our academic collaborators have designed to target and extend the activity of NKT cells, which work directly to kill certain types of parasites and cells, including tumor cells and virus-infected cells. Our NKT platform targets cancer, where we believe the agonists we have developed can minimize or prevent the response paralysis of NKT cells that normally follows stimulation by a strong agonist. We believe these agonists should prolong the activity of NKT cells and help to mobilize and maintain the overall immune response.

NKT cells serve as master regulators of the immune system. NKT cells secrete soluble molecules, cytokines and chemokines that trigger downstream activation of both innate and adaptive immune cells, including antigen presenting dendritic cells, antibody producing B cells, NK cells and T cells, while inhibiting myeloid derived suppressor cells. This cascade of events lowers the barrier for the induction of adaptive immune responses, thereby generating more effective responses. NKT cell activity in patients can be limited as a result of a low local concentration of NKT cells. These cells also frequently fail to respond or develop tolerance following just one round of stimulation by their agonists, which prevents continued stimulation and function. We are applying our agonists to direct NKT cells to the site of antigen presentation to enhance localized immune responses.

We direct NKT cells to the site of an antigen or tumor by administering a fusion protein created through the fusing of two genes that code for different proteins, in this case, a tumor antigen-specific antibody fragment and a molecular complex that efficiently activate NKT cells. The use of a soluble NKT cell-activating complex, as opposed to activation by antigen presenting cells, has been shown to avoid or reduce the tolerance that is typically present after the initial stimulation by agonists.

We have recently developed a means of covalent linkage that is far more stable and effective for NKT cell activation, which resolved a key problem of dissociation of the two components, CD1d and a glycolipid ligand, of the NKT-activating molecular complex when administered in vivo. A patent application has been filed to protect this proprietary technology.

VX25

VX25 is an investigational, bi-specific molecule based on our NKT vaccine platform. VX25 aims to address two major challenges for the therapeutic application of NKT cell stimulation for cancer immunotherapy: (i) the activation of NKT cells without inducing tolerance, or the natural resistance to a second cycle of activation by a strong agonist; and (ii) the efficient targeting of NKT cells to the site of tumors. We and our academic collaborators have designed molecules that incorporate a potent NKT-activating glycolipid in one arm and a tumor-targeting antibody fragment in a second arm. These constructs are being evaluated in various preclinical cancer models.

BVX20 for Multiple Sclerosis

BVX20, an investigational, novel, humanized monoclonal antibody that we selected, was initially planned to be developed by Biocon as a treatment for non-Hodgkin lymphoma, or NHL, pursuant to an agreement entered into with Biocon in October 2009. BVX20 targets the CD20 antigen, which is expressed on both normal and malignant B cells. However, following the announcement by Roche that its investigational anti-CD20 antibody, ocrelizumab, showed positive results in both relapsing and primary progressive forms of MS, the development plan for BVX20 was modified to focus on its use in the treatment of patients with relapsing remitting or progressive MS.

Upon Biocon's completion of initial development of BVX20, we are entitled to further develop and commercialize BVX20 jointly with Biocon. Each party has granted the other party a co-exclusive license to its intellectual property to develop and commercialize BVX20. We have also granted Biocon a fully paid-up, royalty-free and exclusive license to our intellectual property to manufacture clinical and commercial supplies of BVX20. Each party will have certain intellectual property rights to any invention resulting from the development plan. If only one party commercializes BVX20, the other party is entitled to certain royalty payments under the agreement. We may also share certain licensing revenue with Biocon. The agreement will be effective until the expiration of all payment obligations under the agreement, or the expiration of each party's obligations under any manufacturing and supply agreement and/or third-party licensing agreement. Either party may terminate the agreement in the event of bankruptcy or an uncured material breach by the other party.

Biocon initiated a Phase 1 safety and tolerability clinical trial in India in patients with NHL. However, we mutually agreed with Biocon not to further pursue Phase 1 clinical trials in India or elsewhere for NHL. Following discussion with us, Biocon now plans to initiate a new Phase 1 clinical trial for the development of BVX20 in MS in the United States. A positive outcome in this clinical trial may create licensing opportunities in geographies outside of India where we have an option to co-develop and commercialize BVX20.

Manufacturing

We currently do not own or operate manufacturing facilities. We currently have no plans to build our own clinical or commercial scale manufacturing capabilities. We rely, and expect to continue to rely, on third-party contract manufacturing organizations, or CMOs, for the manufacture of our product candidates for clinical trials. Catalent is responsible for the manufacturing of VX15 for use in clinical trials, and we use other third-party CMOs for other aspects of the manufacturing process. We may elect to pursue other CMOs for manufacturing clinical supplies for later-stage trials and for commercialization.

Commercialization

We have not established sales, marketing or product distribution operations. We generally expect to retain some commercial rights in the United States for our product candidates for which we may receive marketing approvals. We expect to utilize a variety of types of collaboration, distribution and other marketing arrangements with one or more third parties to commercialize VX15, upon approval, and any other products that we develop and obtain approval for in markets outside the United States.

Competition

The biotechnology and pharmaceutical industries are characterized by continuing technological advancement and significant competition. While we believe our product candidates, technology, knowledge, experience and scientific resources provide us with competitive advantages, we face competition from major pharmaceutical and biotechnology companies, academic institutions, governmental agencies and public and private research institutions, among others. We believe we are the only company targeting SEMA4D as a potential treatment for neurodegenerative diseases, cancer or autoimmune disorders.

To the extent we are successful in developing VX15, we believe we would compete with products that utilize a different mechanism of action, particularly with respect to Huntington's disease because to date there are no marketed preventative therapeutic treatments for Huntington's disease. *Yervoy*, which targets the CTLA-4 protein, was the first immunomodulating monoclonal antibody to receive FDA approval. Recently, the FDA has also approved *Keytruda* and *Opdivo* for immunotherapy of melanoma and NSCLC, as well as other selected cancer indications. Other antibodies targeting PD-1 or PDL-1, including *Tecentriq*, *Bavencio* and *Imfinzi*, are also in clinical development and have received FDA approval for some cancer indications. These monoclonal antibodies may have been initially tested for specific selected indications, but their broad effects on the immune system as a whole make them potentially relevant across a wide range of solid tumors. We believe the differentiated mechanisms of action of VX15 provide an opportunity to pursue combination therapy with one or more of these competing technologies. Given the known toxicity of immunotherapy, we believe the evidence from three clinical studies to date that VX15 is well-tolerated as a single agent makes it a potentially attractive candidate for combination therapy.

Any product candidates we successfully develop and commercialize may compete with existing therapies and new therapies that may become available in the future. Key product features that would affect our ability to effectively compete with other therapeutics include the efficacy, safety and convenience of our products. Similarly, our ActivMAb antibody discovery platform technology will also compete with marketed or future discovery platforms or alternative technologies on the basis of effectiveness, convenience and cost, among other factors. The level of generic competition and the availability of reimbursement from government and other third-party payors will also significantly affect the pricing and competitiveness of our products. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we enter the market. They may also obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our product candidates or platform technologies.

Many of the companies against which we may compete have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These companies also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Intellectual Property

Overview

Our intellectual property is critical to our business and we strive to protect our technology, including by obtaining and maintaining patent protection in the United States and certain other countries for our platform technologies, product candidates, novel biological discoveries, and other inventions that are important to our business. We pursue broad patent protection for our platform technologies and for our product candidates. We initially pursue patent protection for compositions of matter, methods of use including various treatment indications, and methods of making. Throughout the innovation process, we seek to identify additional means of

obtaining patent protection that would potentially enhance our commercial success, including obtaining patent protection for additional methods of use such as additional medical indications for our product candidates, and refinements and improvements of our platform technologies. We also rely on trade secrets relating to our discovery platform technology and product candidates and seek to protect and maintain the confidentiality of proprietary information to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection.

Our success may also depend on our ability to obtain rights to intellectual property held by third parties that may be necessary or useful to our business. We generally obtain rights to third-party intellectual property through exclusive or non-exclusive licenses. If we are not able to obtain rights to intellectual property held by third parties that are necessary or useful to our business, our business could be harmed, possibly materially harmed.

The patent positions of biotechnology companies like ours, however, are generally uncertain and involve complex legal, scientific and factual questions. In addition, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Consequently, we may not obtain or maintain adequate patent protection for any of our product candidates or platform technologies. We cannot predict whether the patent applications we are currently pursuing will issue as patents in any particular jurisdiction, or whether the claims of any issued patents will provide sufficient protection from competitors. Any patents that we hold may be challenged, circumvented or invalidated by third parties. In such an event, it would have a material and adverse effect on our business and financial condition. For a more comprehensive discussion of the risks related to our intellectual property, please see “Risk Factors–Risks Related to Our Intellectual Property.”

The patent portfolios for our platform technologies and our three most advanced product candidates are summarized below:

SEMA4D Antibody Platform and VX15

Our intellectual property portfolio for our SEMA4D antibody platform and VX15 includes several issued United States and foreign patents as well as pending U.S. and foreign patent applications encompassing compositions of matter for VX15, methods of use and methods of making. We wholly own rights to several families of patents and patent applications related to the SEMA4D antibody platform and VX15 that will expire or are projected to expire between 2030 and 2038. The “Smith II” patent family discloses and claims a group of antibodies and encoding polynucleotides that includes the VX15 antibody, as well as methods of making and using the antibodies. This family has a projected expiration date of May 2030. The Smith II family includes granted patents in the United States (four patents), Australia, Eurasia (validated in Russia, Armenia, Azerbaijan, Belarus, Kirgizstan, Kazakhstan, Moldova, Tajiksistan, and Turkmenistan), Europe (validated in Austria, Belgium, Czech Republic, Germany, Denmark, Finland, Spain, France, Ireland, the UK, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden, and Switzerland), Israel, Japan (two patents), South Korea, Mexico, New Zealand (two patents), Singapore, and South Africa, allowed in China and Mexico, and pending in Australia, Brazil, Canada, Europe, Israel, India, Japan, South Korea, Thailand, the United States and Vietnam. We also wholly own ten additional VX15-related patent families. These are directed to: (i) methods of modifying blood brain barrier permeability and treating neuroinflammatory disorders (projected expiration of October 2032; granted in Australia, Mexico, Russia, Europe (validations pending), New Zealand, South Africa, and Singapore, and pending in the United States, Brazil, Canada, China, Israel, Japan, South Korea, Thailand, and Vietnam); (ii) methods of treating cancer and inhibiting angiogenesis using a combination of an anti-SEMA4D antibody and a VEGF inhibitor (projected expiration of December 2032; granted in the United States and pending in Canada); (iii) compositions comprising the VX15 epitope on SEMA4D and related products such as a nucleic acid encoding the epitope, and methods of producing the polypeptide epitope (projected expiration of March 2033; granted in the United States, New Zealand, and South Africa, allowed in Australia, and pending in Canada); (iv) methods of promoting neurogenesis and treating stroke (projected expiration of May 2033; granted in New Zealand, Japan, and Singapore, allowed in Australia and Eurasia (national validation in Russia pending), and

pending in the United States, Brazil, Canada, China, Europe, Israel, South Korea, Mexico, Thailand and South Africa); (v) methods of treating cancer using a combination of a SEMA4D antagonist and an immune modulator (projected expiration of June 2034; granted in the United States (two patents), and is pending in the United States, Australia, Brazil, Canada, China, Eurasia, Europe, Israel, India, Japan, New Zealand South Korea, Mexico, South Africa, Singapore, and Thailand); (vi) methods of inhibiting the growth of atherosclerotic plaques, inhibiting neovascularization and treating atherosclerosis (projected expiration of October 2034; granted in the United States, and pending in New Zealand, Australia, Brazil, Canada, China, Eurasia, Europe, Israel, Japan, South Korea, Mexico, Singapore, South Africa, and Thailand); (vii) methods of treating neurodegenerative disorders such as Huntington's disease (projected expiration of October 2034; granted in the United States (two patents) and New Zealand, and pending in the United States, New Zealand, Australia, Brazil, Canada, China, Eurasia, Europe, Israel, Japan, South Korea, Mexico, Singapore, South Africa, and Thailand). (viii) methods for early detection of glial cell activation in subjects having, suspected of having, or at risk of developing a neurodegenerative or neuroinflammatory disease such as Huntington's Disease, and determining whether such subjects would benefit from treatment a SEMA4D antagonist (projected expiration of February 2038, international application under the PCT filed February 22, 2018); (ix) methods of treating cancer using a combination of a SEMA4D antagonist and an epigenetic modulator (projected expiration of March 2038, U.S. Provisional filed March 20, 2017, international application under the PCT in process); and (x) a fully-human anti-SEMA4D antibody VX18 (projected expiration May 2038, U.S. Provisional filed May 5, 2017, international application in process).

In addition to the patents and applications wholly owned by us, our SEMA4D antibody platform patent portfolio also includes patents and applications exclusively licensed from third parties, including Institut National de la Santé et de la Recherche Médicale (INSERM) and the Tokyo Medical and Dental University of Japan.

The portfolio includes a patent family exclusively licensed to us by INSERM that has a projected expiration date of February 2024 and includes a Canadian patent and a European patent that both generically claim use of an anti-SEMA4D antibody to treat neuroinflammatory disorders such as MS. We have also exclusively licensed a family of applications directed to compositions and methods for treating osteoporosis and other bone-related diseases from the Tokyo Medical and Dental University of Japan. This family is granted in Australia, China, Europe, Japan, Mexico, New Zealand, Singapore and the United States, and is pending in Brazil, Canada, India, and South Korea. The application family has a projected expiration date of May 2032.

ActivMAb Antibody Discovery Platform

Our ActivMAb platform is encompassed by a patent family wholly owned by us, as well as granted U.S. and foreign patents in families that are exclusively licensed to us by the University of Rochester. These patent families broadly encompass the process and methods of use of the ActivMAb platform.

University of Rochester License Agreement. In connection with the formation of our company in 2001, a 1998 license agreement with the University of Rochester, or the Rochester Agreement, was assigned to us. Under the Rochester Agreement, the University of Rochester granted an exclusive, worldwide, sublicensable license to commercialize patents used in the discovery of antibodies. These patents are relevant to our ActivMAb antibody discovery platform. Under the Rochester Agreement, we are obligated to pay the University of Rochester low single-digit royalties on sales of products covered by the patents licensed to us under the Rochester Agreement as well as an annual license maintenance fee creditable in part against the royalties. In addition, with respect to the first product covered by the patents licensed to us under the Rochester Agreement, we are obligated to pay the University of Rochester milestone payments in de minimis amounts upon (i) the submission of the first IND application, (ii) the approval of the first IND application and (iii) the filing of the first 510(k) filing for a diagnostic. However, because the Rochester Agreement relates to our ActivMAb antibody discovery platform, while we intend to use these patents in our business, we do not intend to directly sell products covered by the patents licensed to us under the Rochester Agreement. The term of the University of Rochester license runs until the end of the enforceable term of any patents issued. The Rochester Agreement may also be terminated upon material breach or terminated by us upon 90 days' prior written notice to the University of Rochester.

ActivMAb Platform Patents. Three patent families covering the ActivMAb platform are wholly owned by us. The first family discloses and claims aspects of the technology as currently practiced that are improved over the in-licensed patent family discussed below. Pending claims in this family include product claims directed to fusion proteins, recombinant libraries, host cells and kits, as well as claims directed to methods of constructing libraries and methods of selecting antibodies possessing a desired specificity. This family has a projected expiration date of March 2033 in the United States and April 2033 in all other jurisdictions. This application family is granted in the United States (two patents), New Zealand, China, and Russia, is allowed in Australia, and is pending in the United States, Canada, Europe, Israel, Japan, South Korea, and Singapore. The second family discloses and claims compositions and methods for displaying multi-pass membrane proteins in native conformation on vaccinia virus extracellular virions to enable selection of antibodies binding to these proteins in our ActivMAb platform. This application is in international phase at the PCT and has a projected expiration date of April 2037. National phase filings will commence in October 2018. The third family discloses and claims methods for increasing the number of independent poxvirus genomes in our antibody libraries. This application is in international phase at the PCT and has a projected expiration date of July 2037. National phase filings will commence in February 2019.

A patent family licensed from the University of Rochester is directed to methods of producing and identifying immunoglobulin molecules in eukaryotic cells, as well as kits for the selection of antigen-specific recombinant immunoglobulins. This family has a projected expiration date of November 2021 in foreign countries and January and March 2025 in the United States. Patents are granted in this family in Australia, Canada, China, Europe, Japan and the United States.

VX5

Our patent portfolio covering VX5 includes a family exclusively licensed from the University of Rochester that contains two U.S. patents and one Canadian patent with projected expiration dates in April 2025 in Canada and October 2025 and November 2026 in the United States. This family includes claims directed to methods of treating MS and rheumatoid arthritis, as well as methods of inhibiting inflammation or reducing ongoing inflammation using anti-CXCL13 antibodies.

The portfolio further includes three VX5-related patent families wholly owned by us. The first, directed to the VX5 composition and related methods, has a projected expiration date of September 2031. This family is granted in Australia, China, Europe, Japan, Mexico, New Zealand and Singapore, is allowed in the United States, and is pending in Brazil, Canada, India, and South Korea. The application includes claims directed to antibodies, nucleic acids, vectors, cells and polypeptides, as well as methods for neutralizing CXCL13, and methods of treating autoimmune diseases or inflammatory diseases. The second family, directed to methods of treatment of B cell-mediated inflammatory diseases, *e.g.*, Sjogren's syndrome, has a projected expiration date of March 2033. This family is granted in the United States, Japan, and New Zealand, is allowed in Australia, and is pending in Canada, China, Europe, India, South Korea, and New Zealand. The third family, directed to methods for increasing mucosal IgA levels, has a projected expiration date of January 2034. It is granted in the United States and is pending in Australia, Canada, China, Europe, Japan, South Korea, and New Zealand.

NKT Vaccine Platform

Our patent portfolio covering our NKT vaccine platform includes three families exclusively licensed from the Albert Einstein College of Medicine, or Einstein, and one co-owned by Einstein and us, as well as two families wholly owned by us. The families include granted patents and pending applications with projected expiration dates extending from September 2023 through February 2034.

The NKT vaccine portfolio includes three families owned or co-owned by Einstein. The first family, assigned to Einstein and exclusively licensed to us, has a projected expiration date of June 2026 in the United States and August 2025 in the remaining jurisdictions. This family has granted patents in Australia, Canada,

China, Europe, Israel, India, Japan (two patents), South Korea, New Zealand and the United States. Claims in this first family are directed to various ceramide-like glycolipid compositions, methods of evaluating a compound for its ability to activate an NKT cell, and methods of treating or preventing an autoimmune disease, cancer or an infection. The second family, co-assigned to Einstein and us and exclusively licensed to us, has a priority date of February 2013 and a projected expiration date of March 2033 in the United States and February 2034 in all other jurisdictions. This family is granted in the United States and is pending in the United States, Japan, China, Australia, Canada, Europe, South Korea, and New Zealand. Claims in this second family are directed to compositions that include modified ceramide-like glycolipids with photoreactive groups to allow covalent linkage of the glycolipid to CD1d in bispecific fusion constructs, and also includes methods of disease treatment. An additional related family directed to bacterial vaccines is assigned to Einstein and exclusively licensed to us. This family, projected to expire in January 2030, is granted in Australia, Japan, New Zealand, and the United States, is allowed in China and Europe, and is pending in Canada, China, India, Japan, and South Korea. This family includes claims directed to compositions including ceramide-like glycolipid-modified bacteria, methods of treating or preventing disease using the modified bacteria, and methods of modulating a CD8 T-cell response to bacille Calmette-Guérin, or BCG, using the modified bacteria. Two NKT vaccine-related families are wholly owned by us. One has a projected expiration date of September 2023, and is granted in the United States, Europe and Canada. This family includes composition claims directed to CD1d molecules fused to antibodies or fragments thereof targeted to specific antigens, and methods of treatment such as inducing anti-tumor responses, preventing or treating autoimmunity or inflammatory diseases, and methods of preventing or treating an infectious disease. The second has a projected expiration date of February 2028, is granted in the United States, Australia Europe, and Japan, and pending in Canada, and the United States. This family includes claims directed to antigen-loaded CD1d molecules, as well as methods of modulating immune responses, methods of treating and/or preventing diseases, and methods of inhibiting an anergic effect of a ceramide-like glycolipid antigen on NKT cell activity.

Patent Protection

The term of individual patents depends on the legal term of the patents in the countries in which they are obtained. In countries in which we file, the patent term is at least 20 years from the filing date of a non-provisional patent application, assuming all maintenance fees and annuities are paid. The patent term in the United States may be extended beyond the 20 year term based on U.S. Patent and Trademark Office, or USPTO, delay. In various jurisdictions, the patent exclusivity covering a specific product can be extended in certain circumstances to account for delays in regulatory approval.

For example, in the United States the term of a patent that covers an FDA-approved product or a method of using or manufacturing the product may also be eligible for extension, which permits patent term restoration as compensation for the patent term lost during product development and the FDA regulatory review process. Patent term extension, which can be applied to only a single patent and is effective only with regard to the approved product, can be available when the approval is the first permitted commercial marketing or use of the active ingredient. The length of the patent term extension is related to the length of time the drug is under development and then regulatory review, and cannot extend the term of a patent more than 14 years from the date of product approval. Similar supplemental protection provisions are available in Europe and other foreign jurisdictions to extend the term of a patent that covers an approved drug. In the future, if and when our products receive FDA approval, we expect to apply for patent term extensions on patents covering those products, where applicable. We plan to seek patent term extensions to any of our issued patents in any jurisdiction where these are available; however, there is no guarantee that the applicable authorities, including the USPTO and the FDA in the United States, will agree with our assessment of whether such extensions should be granted, and if granted, the length of such extensions.

Trade Secret Protection

We also rely on trade secret protection for our confidential and proprietary information. Although we take steps to protect our proprietary information and trade secrets, including through contractual means with our

employees and consultants, third parties may independently develop substantially equivalent proprietary information and techniques, or otherwise gain access to our trade secrets, or disclose our technology. Thus, we may not be able to meaningfully protect our trade secrets. It is our policy to require our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors to execute confidentiality agreements upon the commencement of employment or consulting relationships with us. These agreements provide that all confidential information concerning our business or financial affairs developed or made known to the individual during the course of the individual's relationship with us is to be kept confidential and not disclosed to third parties except in specific circumstances. Our agreements with employees also provide that all inventions conceived by the employee in the course of employment with us or from the employee's use of our confidential information are our exclusive property.

Government Regulation and Product Approval

United States Government Regulation

In the United States, the FDA regulates our current product candidates as biological products, or biologics, under the Federal Food, Drug, and Cosmetic Act, the Public Health Service Act, and related regulations. Biologics are also subject to other federal, state and local statutes and regulations. The FDA and comparable regulatory agencies in state and local jurisdictions impose substantial requirements upon, among other things, the testing, development, manufacture, quality control, safety, purity, potency, labeling, storage, distribution, record keeping and reporting, approval, import and export, advertising and promotion, and postmarket surveillance of biologics. Although our product candidates are subject to these requirements, the ActivMAb and NKT platforms we utilize to develop our product candidates are not themselves subject to FDA regulation.

The FDA's policies may change and additional government regulations may be enacted that could prevent or delay further development or regulatory approval of any product candidates, product or manufacturing changes, additional disease indications, or label changes. We cannot predict the likelihood, nature or extent of government regulation that might arise from future legislative or administrative action.

Failure to comply with applicable statutory and regulatory requirements at any time during the product development process, approval process or after approval may subject a sponsor to administrative or judicial enforcement actions. These actions could include the suspension or termination of clinical trials by the FDA, the FDA's refusal to approve pending applications or supplemental applications, withdrawal of an approval, warning or untitled letters, product recalls, product seizures, total or partial suspension of production or distribution, import detention, injunctions, fines, civil penalties or criminal prosecution. Any such administrative or judicial action could have a material adverse effect on us.

Although this discussion focuses on regulation in the United States, we anticipate seeking approval for and marketing of our product candidates in other countries, either independently or with collaborators. Generally, our product candidates will be subject to regulation in other countries that is similar in nature and scope as those imposed in the United States, although there can be important differences. In Europe, for example, some significant aspects of regulation are addressed in a centralized way through the European Medicines Agency, but country-specific regulation remains essential in many respects.

Biologics Development Process

Before a biologic may be marketed or sold in the United States, a sponsor generally must conduct nonclinical laboratory and animal tests; submit an Investigational New Drug, or IND, application, which must become effective before clinical trials may begin; conduct adequate and well-controlled human clinical trials to establish the safety, purity and potency of the proposed biologic for its intended use or uses; undergo pre-approval inspection of manufacturing facilities and sometimes clinical trial sites; and obtain FDA approval of a Biologics License Application, or BLA. The testing and approval process requires substantial time and

financial resources, and we cannot be certain that any approvals for our product candidates will be granted on a timely basis, if at all.

Preclinical Testing. Before testing any compound in human subjects, a sponsor must develop extensive preclinical data. Preclinical testing generally includes laboratory evaluation of product chemistry and formulation, as well as toxicological and pharmacological studies in several animal species to assess the quality and safety of the product. Certain animal studies must be performed in compliance with the FDA's Good Laboratory Practice regulations, or GLP, and the United States Department of Agriculture's Animal Welfare Act and related regulations.

IND Application. Prior to commencing the first clinical trial in humans, an IND must be submitted to the FDA, and the IND must become effective. A sponsor must submit information, including preclinical testing results, to the FDA as part of the IND and the FDA must evaluate whether there is an adequate basis for testing the drug in humans. The IND automatically becomes effective 30 days after receipt by the FDA unless the FDA within the 30-day time period raises concerns or questions about the submitted data or the conduct of the proposed clinical trial and places the IND on clinical hold. In such case, the IND sponsor must resolve any outstanding concerns with the FDA before the clinical trial may begin. A separate submission to the IND must be made for each successive clinical trial to be conducted during product development. Further, an independent Institutional Review Board, or IRB, for each site proposing to conduct the clinical trial must review and approve the protocol and informed consent form for any clinical trial before it commences at that site. Informed consent must also be obtained from each study subject. Regulatory authorities, an IRB, a data safety monitoring board or the trial sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the study subjects are being exposed to an unacceptable health risk.

Clinical Trials. For purposes of developing product candidates for BLA approval, human clinical trials are typically conducted in phases that may overlap:

- Phase 1 – The investigational biologic is initially given to a small group of healthy human subjects or patients and tested for safety, dosage tolerance, reactivity, absorption, metabolism, distribution and excretion. These trials may also yield early evidence of effectiveness. During Phase 1 clinical trials, sufficient information about the safety of the investigational new drug must be obtained to permit the design of well-controlled and scientifically valid Phase 2 clinical trials.
- Phase 2 – Studies are conducted in a limited number of patients to identify possible adverse effects and safety risks, to assess the efficacy of the investigational product for the particular indication or indications sought within the target disease or condition and to determine dosage tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3 – When Phase 2 evaluations show that an investigational product may have a promising benefit-risk profile, Phase 3 clinical trials are undertaken at multiple clinical trial sites to establish statistically significant evidence of the safety, purity, and potency of the investigational biologic for the proposed use and the proposed dosing regimen, and to provide an adequate basis for product labeling and ultimately, for approval by the FDA. Statistical significance means that a result is unlikely to have occurred by chance. In drug development, pre-clinical study and clinical trial results are generally considered statistically significant when the probability of the results occurring by chance, rather than from the effect of the drug candidate, is sufficiently low.

All clinical trials must be conducted in accordance with Good Clinical Practice requirements, or GCPs, which establish standards for conducting, recording data from, and reporting the results of, clinical trials. GCPs are intended to assure that the data and reported results are credible and accurate, and that the rights, safety, and well-being of study participants are protected. The conduct of clinical trials also must comply with the FDA's bioresearch monitoring regulations. A study sponsor is also required to submit to the National Institutes of

Health, or NIH, for public posting on NIH's clinical trial website, www.clinicaltrials.gov, certain details about applicable clinical trials and clinical trial results.

Our planned clinical trials for our product candidates may not begin or be completed on schedule, if at all. Clinical trials can be delayed for a variety of reasons, including delays in:

- obtaining regulatory authorization to commence a study;
- reaching agreement with clinical trial sites and their subsequent performance in conducting accurate and reliable studies on a timely basis;
- obtaining IRB approval to conduct a study at a prospective site;
- recruiting patients to participate in a study; and
- supply of the investigational product and related materials.

Success in early stage clinical trials does not ensure success in later stage clinical trials. Data obtained from clinical trials are not always conclusive and may be susceptible to varying interpretations, which could delay, limit or prevent regulatory approval.

The BLA Process

BLA Submission and Review. In order to obtain approval to market a biologic in the United States, a BLA must be submitted to the FDA that provides data establishing to the FDA's satisfaction the safety, purity and potency of the investigational product for the proposed indication(s). Each BLA requires a substantial user fee payment unless a waiver or exemption applies. The application includes all relevant data available from pertinent nonclinical studies and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls and proposed packaging and labeling, among other things. Data may come from company-sponsored studies as well as from a number of alternative sources, including studies initiated by investigators.

The FDA will initially review the BLA for completeness before the BLA accepts it for filing. Under the FDA's procedures, the agency has 60 days from its receipt of a BLA to determine whether the application will be accepted for filing based on the agency's threshold determination that the application is sufficiently complete to permit substantive review. If it determines that the application does not meet this initial standard, the FDA may refuse to file the application and request additional information, in which case the application must be resubmitted with the requested information, and review of the application is delayed. After the BLA is accepted for filing, the FDA reviews the BLA to determine, among other things, whether the proposed product is safe, pure and potent, which includes determining whether it is effective for its intended use, and whether the product is being manufactured in accordance with current Good Manufacturing Practices, or cGMPs, to assure and preserve the product's identity, strength, quality, potency and purity. The FDA may refer applications for novel products or products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and, if so, under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions and usually has followed such recommendations.

During the approval process, the FDA also will determine whether a Risk Evaluation and Mitigation Strategy, or REMS, is necessary to assure the safe use of the biologic. A REMS may include various elements depending on what the FDA considers necessary for the safe use of the biologic, ranging from a medication guide or patient package insert to limitations on who may prescribe or dispense the biologic. If the FDA concludes that a REMS is needed, the BLA sponsor must submit a proposed REMS and the FDA will not approve the BLA without a REMS that the agency has determined is acceptable.

Certain applications for approval must include an assessment, generally based on clinical trial data, of the safety and effectiveness of the biological product in relevant pediatric populations. Under certain circumstances,

the FDA may waive or defer the requirement for a pediatric assessment, either at the sponsor's request or by the agency's initiative.

FDA performance goals generally provide for action on a BLA within 10 months of filing, which (as discussed above) typically occurs within 60 days of submission, but that deadline is extended in certain circumstances. Moreover, the review process is often significantly extended by FDA requests for additional information or clarification. A sponsor may apply to restore a portion of patent term lost during product development and FDA review of a BLA if approval of the application is the first permitted commercial marketing or use of a biologic containing the active ingredient. The patent term restoration period is generally one-half the time between the effective date of the IND and the date of submission of the BLA, plus the time between the date of submission of the BLA and the date of FDA approval of the product. The maximum period of restoration is five years, and the patent cannot be extended to more than 14 years from the date of FDA approval of the product. Only one patent claiming each approved product is eligible for restoration and the patent holder must apply for restoration within 60 days of approval. The USPTO, in consultation with the FDA, reviews and approves the application for patent term restoration.

For investigational products that are intended to treat serious diseases, certain mechanisms may expedite the development and FDA approval process. For example, the FDA may grant Priority Review designation to a product that could provide significant improvement in the treatment, diagnosis, or prevention of a serious condition. Priority Review sets the target date for FDA action on the application at six months from filing of the BLA, rather than the standard 10 months. Priority Review designation does not, however, change the standard for approval or the quality of evidence necessary to support approval. Another potential approach is Fast Track designation, which a sponsor can request at any time during the development process to facilitate development and expedite review of a product intended to treat a serious condition and fill an unmet medical need. Fast Track designation involves early and frequent communication between the FDA and the sponsor (e.g., about clinical trial design), and also allows rolling review, under which a sponsor may submit sections of its BLA for FDA review on an ongoing basis, rather than waiting to submit the BLA when the entire application is complete, each of which may lead to earlier BLA submission and approval. Breakthrough Therapy designation is another approach that is intended to expedite development and review of a product that is intended to treat a serious condition and where preliminary clinical evidence indicates that the product may demonstrate substantial improvement over available therapy on a clinically significant endpoint. Breakthrough Therapy designation provides all of the features of Fast Track designation, as well as the opportunity to obtain early and intensive guidance from the FDA for an efficient drug development program and a commitment to involve senior agency personnel in providing this guidance. A fourth approach is Accelerated Approval, which is available for a drug intended to treat a serious condition that fills an unmet need. FDA may grant accelerated approval based on such drug's effect on a surrogate endpoint or an intermediate clinical endpoint that is reasonably likely to predict clinical benefit, subject to the requirement that the sponsor conduct postmarketing confirmatory trials to verify the clinical benefit.

If the FDA determines that a BLA does not meet the regulatory standard for approval, it will issue a Complete Response letter to communicate that the agency will not approve the BLA in its current form and to inform the sponsor of changes the sponsor must make or additional clinical, nonclinical or manufacturing data the sponsor must provide before the FDA can approve the application, with no implication regarding the ultimate approvability of the application. If a Complete Response letter is issued, the sponsor may resubmit the BLA, addressing the deficiencies identified in the letter or withdraw the application.

Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless the agency determines that the manufacturing processes and facilities are in compliance with cGMP and are adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA may inspect one or more clinical sites to assure compliance with GCP. If it determines that the application, manufacturing process or manufacturing facilities are not acceptable, the FDA typically will outline the deficiencies and often will request additional testing or

information. This may significantly delay further review of the application. If the FDA finds that a clinical site did not conduct the clinical trial in accordance with GCP, the FDA may determine that the data generated by the clinical site should be excluded from analyses provided in the BLA. Additionally, notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

The testing and approval process for a biologic requires substantial time, effort and financial resources and this process may take several years to complete. The FDA may not grant approval on a timely basis, or at all. We may encounter difficulties or unanticipated costs in our efforts to secure necessary governmental approvals, which could delay or preclude us from marketing our products.

Even if a product candidate receives regulatory approval, the approval may be limited to specific disease states, patient populations and dosages, or might contain significant limitations on use in the form of warnings, precautions or contraindications, or in the form of a REMS, restrictions on distribution, or postmarketing study requirements. Further, even after regulatory approval is obtained, later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market. In addition, we cannot predict what adverse regulations may arise from future governmental action.

Postmarketing Commitments. The FDA may require, or companies may pursue, additional clinical trials after a product is approved. These so-called Phase 4 clinical trials may be a condition to be satisfied for continuing drug approval. The results of Phase 4 clinical trials can, among other things, be intended to confirm the effectiveness of a product candidate that received Accelerated Approval, or to provide important safety information. In addition, the FDA has express statutory authority to require sponsors to conduct postmarket studies to specifically address safety issues identified by the agency.

Orphan Drug Exclusivity. The Orphan Drug Act provides incentives for the development of drugs and biological products intended to treat rare diseases or conditions, which generally are diseases or conditions affecting fewer than 200,000 individuals in the United States. If a sponsor demonstrates that a drug or biologic is intended to treat a rare disease or condition, the FDA may grant orphan drug designation to the product for that use. The benefits of orphan drug designation include research and development tax credits and exemption from the application user fees. A drug or biologic that is approved for the orphan designated indication is granted seven years of orphan drug exclusivity. During that period, the FDA generally may not approve any other application for the same product (for biologics, that means a product with the same principal molecular structural features) for the same indication, although there are exceptions, most notably when the later product is shown to be clinically superior to the product with exclusivity.

Post-Approval Requirements

If and when approved, any products manufactured or distributed by us or on our behalf will be subject to continuing regulation by the FDA, including requirements for record-keeping, reporting of adverse experiences, submitting annual reports, and reporting biological product deviations. Also, post-approval modifications to a licensed biologic, such as changes in indications, labeling, or manufacturing processes or facilities, may require a sponsor to develop additional data or conduct additional preclinical studies or clinical trials, to be submitted in a new or supplemental BLA, which would require FDA review and approval.

Good Manufacturing Practice. Manufacturers are required to register their facilities with the FDA and certain state agencies, and are subject to periodic inspections by the FDA and certain state agencies for compliance with cGMP, which relate to among other things organization of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, packaging and labeling controls, holding and distribution, laboratory controls, quality control and quality assurance procedures, and records and reports. We cannot be certain that we or our present or future suppliers

will be able to comply with all cGMP and other applicable regulatory requirements. If we or our present or future suppliers are not able to comply with these requirements, the FDA may halt our clinical trials, refuse to approve a BLA or other application, force us to recall a drug from distribution, shut down manufacturing operations or withdraw approval of a BLA. Noncompliance with cGMP or other applicable FDA requirements can also result in other sanctions, including issuance of warning letters, fines, civil and criminal penalties, seizures, operating restrictions, and injunctive action.

Advertising and Promotion. The FDA and other federal and state agencies regulate the labeling, marketing, advertising and promotion of biologics. A biologic cannot be commercially promoted before it is approved. After approval, promotion of a biologic must be consistent with the labeling approved by the FDA. Although doctors may prescribe a product approved by the FDA for any use, a company may not promote its approved product for uses not approved by the FDA. Under certain conditions, however, a company may engage in non-promotional, balanced communication regarding an unapproved use. In addition, any claims that a company makes in advertising or promotion must be adequately substantiated and effectiveness claims must be appropriately balanced with safety information. Failure to comply with these requirements may result in, among other consequences, untitled or warning letters, corrective advertising requirements, injunctions, potential civil and criminal penalties, criminal prosecution, and agreements with governmental agencies that materially restrict the manner in which a company promotes or distributes its products. Government regulators other than FDA, including the Department of Justice and the Office of the Inspector General of the Department of Health and Human Services, as well as state authorities, have scrutinized the promotion and marketing of drugs and biologics.

Biologics Price Competition and Innovation Act of 2009

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, amended the Public Health Service Act to create a new licensure framework for biosimilar products. The BPCIA sets criteria for determining that a product is biosimilar to an already-licensed biologic, or reference product, and establishes a process by which an abbreviated BLA for a biosimilar product is submitted, reviewed and approved. In certain circumstances, the BPCIA provides periods of exclusivity that protect a reference product from biosimilar competition. If applicable, the exclusivities prevent the FDA from accepting a biosimilar application for review until four years after the date of first licensure of the reference product, and from approving the biosimilar until 12 years after the reference product's approval. Additionally, the BPCIA establishes procedures by which the biosimilar applicant provides information about its application and product to the reference product sponsor, and by which information about potentially relevant patents is shared and litigation over patents may proceed in advance of approval. The BPCIA also provides a period of exclusivity for the first biosimilar to be determined by the FDA to be interchangeable with the reference product.

In addition, the BPCIA incorporates by reference many provisions of section 505A of the Federal Food, Drug, and Cosmetic Act, such that if a sponsor conducts pediatric studies for a biologic that fairly respond to a written request from FDA, the 12-year exclusivity period will be deemed to be 12 ½ years, and the 4-year period will be deemed to be 4 ½ years.

The contours of the BPCIA are still being defined by the FDA through a variety of means, including issuance of guidance documents and decisions the agency has made in the course of considering and approving specific biosimilar applications. FDA may promulgate regulations to implement provisions of the BPCIA, as well. FDA's interpretation of the BPCIA, as well as court decisions in lawsuits regarding provisions of the BPCIA, may significantly affect the impact of the statute on both reference product and biosimilar sponsors. For example, the Supreme Court has held that, notwithstanding language in the statute that a biosimilar applicant "shall provide" certain information to the reference product sponsor, the information exchange is not mandatory.

Coverage and Reimbursement

In both domestic and foreign markets, sales of any product candidates for which we may receive regulatory approval will depend in part upon the availability of coverage and reimbursement from third-party payors. Such third-party payors include governmental healthcare programs, such as Medicare and Medicaid, private health insurers and managed care organizations and other entities. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products when more established or lower cost therapeutic alternatives are already available or subsequently become available. Assuming coverage is granted, the reimbursement rates paid for covered products might not be adequate for us to sell on a profitable basis. Even if favorable coverage status and adequate reimbursement rates are attained, less favorable coverage policies and reimbursement rates may be implemented in the future. The marketability of any products for which we may receive regulatory approval for commercial sale may suffer if governmental healthcare programs and other third-party payors fail to provide coverage and adequate reimbursement to allow us to sell such products on a competitive and profitable basis. For example, under these circumstances, physicians may limit how much or under what circumstances they will prescribe or administer, and patients may decline to purchase, such products. This, in turn, could affect our ability to successfully commercialize our products and impact our profitability, results of operations, financial condition, and future success.

If we successfully commercialize any of our products, we may participate in the Medicaid Drug Rebate program. Participation is required for federal funds to be available for our covered outpatient drugs under Medicaid and, if applicable, Medicare Part B. Under the Medicaid Drug Rebate Program, we would be required to pay a rebate to each state Medicaid program for our covered outpatient drugs that are dispensed to Medicaid beneficiaries and paid for by a state Medicaid program as a condition of having federal funds being made available to the states for our drugs under Medicaid and, if applicable, Part B of the Medicare program.

Federal law requires that any company that participates in the Medicaid Drug Rebate Program also participate in the Public Health Service's 340B drug pricing program in order for federal funds to be available for the manufacturer's drugs under Medicaid and Medicare Part B. The 340B drug pricing program requires participating manufacturers to agree to charge statutorily-defined covered entities no more than the 340B "ceiling price" for the manufacturer's covered outpatient drugs. These 340B covered entities include a variety of community health clinics and other entities that receive health services grants from the Public Health Service, as well as hospitals that serve a disproportionate share of low-income patients.

In addition, in order to be eligible to have its products paid for with federal funds under the Medicaid and Medicare Part B programs and purchased by certain federal agencies and grantees, a manufacturer also must participate in the U.S. Department of Veterans Affairs, or VA, Federal Supply Schedule, or FSS, pricing program. Under this program, the manufacturer is obligated to make its innovator and single source products available for procurement on an FSS contract and charge a price to four federal agencies, DoD Public Health Service and U.S. Coast Guard, that is no higher than the statutory Federal Ceiling Price. Moreover, pursuant to regulations issued by the DoD Defense Health Agency to implement Section 703 of the National Defense Authorization Act for Fiscal Year 2008, manufacturers are required to provide rebates on utilization of their innovator and single source products that are dispensed to TRICARE beneficiaries by TRICARE network retail pharmacies. The requirements under the 340B, FSS, and TRICARE programs could reduce the revenue we may generate from any products that are commercialized in the future and could adversely affect our business and operating results.

The market for any product candidates for which we may receive regulatory approval will depend significantly on the degree to which these products are listed on third-party payors' drug formularies, or lists of medications for which third-party payors provide coverage and reimbursement. The industry competition to be included on such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug on their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available. In

addition, because each third-party payor individually approves coverage and reimbursement levels, obtaining coverage and adequate reimbursement is a time-consuming and costly process. We may be required to provide scientific and clinical support for the use of any product to each third-party payor separately with no assurance that approval will be obtained, and we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost-effectiveness of our products. We cannot be certain that our product candidates will be considered cost-effective by third-party payors. This process could delay the market acceptance of any product candidates for which we may receive approval and could have a negative effect on our future revenues and operating results.

Federal and State Fraud and Abuse and Data Privacy and Security Laws and Regulations

In addition to FDA restrictions on marketing of pharmaceutical products, federal and state fraud and abuse laws restrict business practices in the pharmaceutical industry. These laws include anti-kickback and false claims laws and regulations as well as data privacy and security laws and regulations. The federal Anti-Kickback Statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce or in return for the referral of an individual for or purchasing, leasing, ordering or arranging for or recommending the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. The term "remuneration" has been broadly interpreted to include anything of value. The Anti-Kickback Statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers and formulary managers on the other. Although there are a number of statutory exemptions and regulatory safe harbors protecting some common activities from prosecution, the exemptions and safe harbors are drawn narrowly. Practices that involve remuneration that may be alleged to be intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exemption or safe harbor. Moreover, there are no safe harbors for many common practices in the industry, including patient and product support programs, educational and research grants, and charitable donations. Several courts have interpreted the statute's intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the statute has been violated. Liability under the Anti-Kickback Statute may be established without proving actual knowledge of this statute or specific intent to violate it. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act or the civil monetary penalties statute.

The federal civil False Claims Act imposes on individuals and entities civil penalties for, among other things, knowingly presenting, or causing to be presented, a false claim for payment of government funds or knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim, or for knowingly and improperly avoiding or decreasing an obligation to pay or transmit money to the government. Actions under the False Claims Act can be brought by the Attorney General or as a qui tam action by a private individual in the name of the government, who may share in any judgments or settlements. Many pharmaceutical and other healthcare companies have been investigated and have reached substantial financial settlements with the federal government under the civil False Claims Act for a variety of alleged improper marketing activities. Several pharmaceutical and other healthcare companies have been subject to investigations and liability under the False Claims Act for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. Other companies have faced actions for causing false claims to be submitted because of the companies' marketing of products for unapproved, and thus non-reimbursable, uses. More recently, federal enforcement agencies are and have been investigating certain pharmaceutical companies' product and patient assistance programs, including manufacturer reimbursement support services, relationships with specialty pharmacies, and grants to independent charitable foundations. Conduct that results in a False Claims Act violation may also implicate various other federal criminal false claim and false statement statutes.

In addition, HIPAA created federal criminal laws that prohibit knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private third-party payors, and knowingly and willfully

falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

Analogous state laws and regulations, such as state anti-kickback and false claims laws, may apply to items or services reimbursed under Medicaid and other state programs or, in several states, apply regardless of the payor. Some state laws require pharmaceutical companies to report expenses relating to the marketing and promotion of pharmaceutical products and to report gifts and payments to certain health care providers in the states. Other states prohibit providing meals to prescribers or other marketing-related activities. Some states restrict the ability of manufacturers to offer co-pay support to patients for certain prescription drugs, while other states and cities require identification or licensing of sales representatives. In addition, California, Connecticut, Nevada, and Massachusetts require pharmaceutical companies to implement compliance programs or marketing codes of conduct. Foreign governments often have similar regulations, which we also will be subject to in those countries where we market and sell products.

The federal Physician Payments Sunshine Act, implemented as the Open Payments program, requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare and Medicaid Services within the U.S. Department of Health and Human Services information related to payments or other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by physicians (as defined above) and their immediate family members.

In addition, we may be subject to data protection laws and regulations. In the U.S., numerous federal and state laws and regulations, including state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act), govern the collection, use, disclosure, and protection of health-related and other personal information. Failure to comply with data protection laws and regulations could result in government enforcement actions and create liability for us (which could include civil and/or criminal penalties), private litigation and/or adverse publicity. We may also obtain health information from third parties (e.g., healthcare providers who prescribe our products) that are subject to privacy and security requirements under HIPAA. Although we are not directly subject to HIPAA, other than potentially with respect to providing certain employee benefits, we could be subject to criminal penalties if we knowingly obtain or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA. HIPAA generally requires that healthcare providers and other covered entities obtain written authorizations from patients prior to disclosing protected health information of the patient (unless an exception to the authorization requirement applies). If authorization is required and the patient fails to execute an authorization or the authorization fails to contain all required provisions, then we may not be allowed access to and use of the patient's information and our research efforts could be impaired or delayed. Furthermore, use of protected health information that is provided to us pursuant to a valid patient authorization is subject to the limits set forth in the authorization (e.g., for use in research and in submissions to regulatory authorities for product approvals). In addition, HIPAA does not replace federal, state, international or other laws that may grant individuals even greater privacy protections.

Because of the breadth of these laws and the narrowness of available statutory exemptions and regulatory safe harbors, it is possible that some of our business activities could be subject to challenge, investigation or legal action under one or more of such laws or regulations. If our operations are found to be in violation of any of the federal and state laws described above or any other governmental regulations that apply to us, we may be subject to criminal liability and imprisonment, and significant civil and administrative penalties, including, without limitation, damages, fines, exclusion from participation in government healthcare programs like Medicare and Medicaid, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. To the extent that any of our product candidates receive approval and are sold in a foreign country, we may be subject to similar foreign laws and regulations, which may include, for instance, applicable postmarketing requirements, including safety surveillance, anti-fraud and abuse

laws, and implementation of corporate compliance programs and reporting of payments or transfers of value to healthcare professionals.

Healthcare Reform

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any product candidates for which we obtain marketing approval. Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. In March 2010, President Obama signed into law the Affordable Care Act, which substantially changes the way healthcare is financed by both governmental and private insurers, and significantly impacts the pharmaceutical industry. Among the provisions of the Affordable Care Act of importance to our business, including, without limitation, our ability to commercialize, and the prices we may obtain for, any of our product candidates that are approved for sale, are the following:

- an annual, nondeductible fee on any entity that manufactures or imports branded prescription drugs and biologic agents, apportioned among these entities according to their sales of branded prescription drugs under certain government healthcare programs such as Medicare and Medicaid;
- increases in the statutory minimum rebates a manufacturer must pay as a condition to having covered drugs available for payment under the Medicare Part B and Medicaid programs;
- expansion of healthcare fraud and abuse laws, including the federal False Claims Act and the federal Anti-Kickback Statute, and the addition of new government investigative powers and enhanced penalties for non-compliance;
- extension of a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- a Medicare Part D coverage gap discount program, under which a participating manufacturer must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D. The Bipartisan Budget Act of 2018 increased the required manufacturer discount to 70% off the negotiated price for Medicare Part D beneficiaries in the coverage gap beginning in 2019;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new eligibility categories for certain individuals with income at or below 133% of the federal poverty level beginning in 2014;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- the new requirements under the federal Open Payments program created as part of the Physician Payments Sunshine Act under Section 6002 of the Affordable Care Act and its implementing regulations, which requires manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the U.S. Department of Health and Human Services information related to "payments or other transfers of value" made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals. Applicable manufacturers and applicable group purchasing organizations must also report annually to the U.S. Department of Health and Human Services ownership and investment interests held by physicians (as defined above) and their immediate family members. Data collection for these reporting requirements began on August 1, 2013, and manufacturers were required to submit reports to the U.S. Department of Health and Human Services by March 31, 2014. Beginning in 2015, manufacturers are required to

submit data reports by the 90th day of each calendar year. The U.S. Department of Health and Human Services discloses the information on a public website;

- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

Moreover, certain legislative changes to and regulatory changes under the Affordable Care Act have occurred in the 115th United States Congress and under the Trump Administration. For example, the Tax Act eliminated the shared responsibility payment for individuals who fail to maintain minimum essential coverage under section 5000A of the Internal Revenue Code of 1986, commonly referred to as the individual mandate, beginning in 2019.

In addition, other legislative changes have been proposed and adopted since the Affordable Care Act was enacted. These changes include aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect in April 2013. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, reduced Medicare payments to several types of providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. The full impact on our business of the Affordable Care Act and other new laws is uncertain but may result in additional reductions in Medicare and other healthcare funding. Nor is it clear whether other legislative changes will be adopted, if any, or how such changes would affect the demand for our drugs once commercialized.

Regulation Outside of the United States

We are also subject to numerous federal, state and local laws relating to such matters as safe working conditions, manufacturing practices, environmental protection, fire hazard control, and disposal of hazardous or potentially hazardous substances. We may incur significant costs to comply with such laws and regulations now or in the future.

Employees

As of December 31, 2017, we had 42 full-time employees and one part-time employee. Of the full-time employees, 32 were primarily engaged in research and development activities and 12 have an M.D. or a Ph.D. degree. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Facilities

Our principal executive office is located in Rochester, New York, and consists of approximately 31,180 square feet of leased office and laboratory space under a lease that expires on October 31, 2018.

Legal Proceedings

We are not currently subject to any material legal proceedings.

Financing Arrangements with Canadian Investors

Vaccinex Products

Beginning in November 2009, we entered into financing arrangements with certain Canadian investors to advance the development of certain therapeutic monoclonal antibodies under development by us in certain indications. As a result of these investments, the investors, which included FCMI Financial Corp., or FCMI Financial, and its parent company, FCMI Parent, each of which are related parties and controlled by our chairman, Albert Friedberg, received noncontrolling interests in two Delaware partnerships, VX Therapeutics LP, or VX1, and VX2 (Delaware) LP, or VX2. In connection with the initial investments in VX1 and VX2, we licensed to Vaccinex Products, LLC, or Products LLC, our wholly owned subsidiary, and Products LLC then sublicensed to VX1 and VX2, certain intellectual property rights in the relevant antibodies. In consideration therefor, VX1 and VX2 issued return-oriented securities to Products LLC that were convertible into partnership interests in VX1 and VX2, respectively. VX1 and VX2 also entered into separate services agreements with us under which we would develop such antibodies in exchange for service fees to be paid by VX1 and VX2 under the services agreements.

During 2012, VX1 transferred its rights to continue to develop antibodies to VX2 and the VX1 noncontrolling investors were given the option to exchange, at any time, their interests in VX1 for shares of our common stock. Also during 2012, FCMI Parent invested $12.0 million of additional funds in VX2. In June 2012, FCMI Parent as the assignee of FCMI Financial exchanged an approximate 47.8% interest in VX1 for 2,473,425 shares of our common stock. In April 2013, FCMI Parent as the assignee of FCMI Financial exchanged an approximate 8.1% interest in VX1 for 417,206 shares of our common stock. As a result of these exchanges, we then owned 55.8% of the interests in VX1. During 2013, FCMI Parent invested an additional $35,000 in VX2.

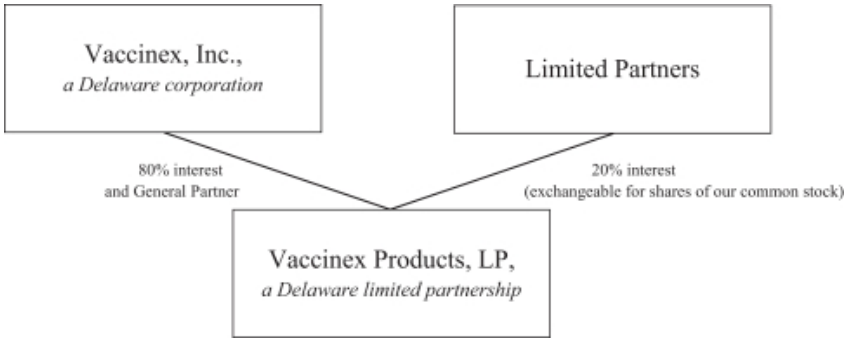
In October 2014, pursuant to a series of transactions we refer to as the Reorganization, we reorganized the structure of these entities to simplify the structure and the contractual relationships associated with the ownership of rights to our intellectual property. Under the Reorganization, Products LLC was merged with and into us and we became the successor to all existing licenses and service agreements between Products LLC and VX1 and VX2. We triggered a conversion of the return-oriented securities that were held by Products LLC into partnership interests in VX1 and VX2, which we now hold as successor to Products LLC. We created a new partnership, Vaccinex Products, and VX1 and VX2 were consolidated with and into Vaccinex Products. The VX1 and VX2 partnership interests were then converted into a single class of limited partnership interests of Vaccinex Products. As a result of the Reorganization, Vaccinex Products retains the license rights previously held by VX1 and VX2 through an amended agreement with us and we are an 80% owner and the sole general partner of Vaccinex Products. The former VX1 and VX2 noncontrolling investors, Vaccinex Products and we are parties to an exchange agreement pursuant to which each noncontrolling investor has the option, at any time, to exchange all, but not less than all, of its Vaccinex Products units on a one-for-one basis into shares of our common stock. The exchange agreement also provides that in the event FCMI Financial exercises its option to exchange its Vaccinex Products units for shares of our common stock, it would trigger the exchange of all Vaccinex Products units held by the other noncontrolling investors for shares of our common stock. Further, under the exchange agreement, we have a right to require the exchange of all units held by the noncontrolling investors for shares of our common stock in any of the following circumstances:

- we enter into a transaction such as a sale, merger or consolidation such that shares of our common stock are or will be sold or exchanged for cash and/or marketable securities;
- at any time on or after October 24, 2019;
- either we or Vaccinex Products enters into a licensing, partnering or similar transaction with respect to one or more products and indications licensed to Vaccinex Products by us, and all amounts then due and owing to Vaccinex Products in connection with such transaction have been paid to Vaccinex Products; or

- if in connection with such exchange, we purchase or repurchase the Vaccinex Products units or shares of our common stock that are held by or issuable to the noncontrolling investors for cash (or cash is otherwise distributed to the investors) in an amount equal to 15%, in the case of FCMI Financial, and 23%, in the case of all other investors, of the-then fair market value of our common stock that would otherwise be delivered to such investor pursuant to such exchange.

In aggregate, the Vaccinex Products units held by the former VX1 and VX2 noncontrolling investors are exchangeable into 12,025,873 shares of our common stock, of which 9,679,833 shares would be beneficially owned by FCMI Parent.

Upon completion of the Reorganization in 2014 and upon consummation of this offering, the resulting ownership structure was and will be as follows:



VX3

In November 2017, we entered into a license agreement, or the VX3 License Agreement, with VX3, which was formed in October 2017 by a group of Canadian investors including our majority stockholder FCMI Parent. Under the VX3 License Agreement, we granted VX3 the license to use, make, have made, sell, offer and import VX15 for the treatment of Huntington's disease in the U.S. and Canada. Pursuant to the VX3 License Agreement, VX3 agreed to pay us up to an aggregate of $32.0 million in milestone payments and to share any VX15 profits and sublicensing revenue under the agreement in an amount based on a calculation set forth in the agreement. In connection with the VX3 License Agreement, we also entered into the Services Agreement with VX3 effective as of January 1, 2017, pursuant to which we will carry out development activities for VX15 for the treatment of Huntington's disease in the U.S. and Canada in exchange for services payments from VX3, including a payment of $11.9 million for 2017. On February 28, 2018, the Services Agreement was amended to provide for an additional payment of $8.0 million from VX3 for services performed in 2018. The VX3 License Agreement expires upon the last to expire licensed patent, and may be terminated by either party upon uncured material breach, the occurrence of certain transactions or financings including the consummation of an initial public offering by us, uncured failure of VX3 to make any payment due under the services agreement, or upon written notice after November 6, 2020. The Services Agreement may be terminated by either party upon uncured material breach and is automatically terminated upon termination of the VX3 License Agreement. The VX3 License Agreement provides that upon termination, we will issue to VX3 or its designees the number of shares of our common stock equal to the lesser of (1) the aggregate of all payments made to VX3 by the Canadian investors divided by $1.82 and (2) the then fair market value of VX3 divided by the then fair market value of one share of our common stock. We have determined VX3 to be a variable interest entity (VIE) in which we are the primary beneficiary.

On March 16, 2018, we entered into an agreement with VX3 and its partners, including FCMI Parent, pursuant to which, immediately prior to the consummation of this offering, the parties will execute an exchange

agreement in the form attached thereto providing each VX3 partner with the right to exchange all, but not less than all, of its partnership interests in VX3 for shares of our common stock. The exchange agreement will provide that in the event FCMI Parent exercises its option to exchange its VX3 partnership interests for shares of our common stock, it would trigger the exchange of all VX3 partnership interests for shares of our common stock. Further, under the exchange agreement, we will have a right to require the exchange of all partnership interests in VX3 for shares of our common stock in any of the following circumstances:

- we enter into a transaction such as a sale, merger or consolidation such that shares of our common stock are or will be sold or exchanged for cash and/or marketable securities;
- at any time on or after the fifth anniversary of the exchange agreement; or
- either we or VX3 enters into a licensing, partnering or similar transaction with respect to one or more products and indications licensed to VX3 by us, and all amounts then due and owing to VX3 in connection with such transaction have been paid to VX3.

MANAGEMENT

Directors and Executive Officers

The following table sets forth the name, age and position of each of our directors and executive officers as of April 13, 2018.

Name	Age	Position
Directors		
Albert D. Friedberg	71	Director
Alejandro M. Berlin, M.D., MSc(2)	36	Director
Alan L. Crane	54	Director
Jacob B. Frieberg(1)(2)(4)	61	Director
J. Jeffrey Goater(2)(3)	42	Director
Bala S. Manian, Ph.D,(3)	72	Director
Gerald E. Van Strydonck(1)	73	Director
Barbara Yanni(1)(2)(3)	63	Director
Executive Officers		
Maurice Zauderer, Ph.D	72	President, Chief Executive Officer and Director
Scott E. Royer, CFA, MBA	44	Chief Financial Officer
Raymond E. Watkins	59	Senior Vice President and Chief Operating Officer
John E. Leonard, Ph.D.	71	Senior Vice President, Development & Officer
Ernest S. Smith, Ph.D.	46	Senior Vice President, Research and Chief Scientific Officer

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.
(4) Lead Director.

The following includes a brief biography for each of our directors and executive officers, with each director biography including information regarding the experiences, qualifications, attributes or skills that caused our board of directors to determine that each member of our board of directors should serve as a director as of the date of this prospectus. There are no family relationships among any of our directors or executive officers.

Directors

Albert D. Friedberg has served as chairman of our board of directors since our inception in April 2001. Mr. Friedberg has also served as the Chief Executive Officer and President and a director of Friedberg Mercantile Group Ltd., a Toronto-based commodities and investment management firm, since founding the company in 1971. Since 1978, he served as the President and Chief Investment Strategist for the Friedberg Group of Funds. Mr. Friedberg was appointed as a member of the Commodity Futures Advisory Board of Ontario in 1979, and served as chairman of the Toronto Futures Exchange from March 1985 to June 1988. Mr. Friedberg received a B.A. in Economics from Johns Hopkins University and an MBA in International Banking from Columbia University. We believe that Mr. Friedberg's experience in the financial and investment management industry, and his experience as the Chief Executive Officer and President and service as a director of Friedberg Mercantile Group give him the qualifications and skills to serve on our board of directors.

Alejandro M. Berlin, M.D. MSc has served as a member of our board of directors since February 2015. Since September 2015, Dr. Berlin has served as a radiation oncologist staff and clinician-investigator at Princess

Margaret Cancer Centre, a Toronto-based health service provider. From January 2013 to December 2014, he was a radiation oncology clinical research fellow at Princess Margaret Cancer Centre. From January 2007 to August 2015, Dr. Berlin served as a radiation oncologist at Clinica Alemana Santiago, a Chile-based health service provider. Dr. Berlin is a member of the Canadian Prostate Cancer (CPC-Gene) project, which is part of the International Cancer Genome Consortium. Dr. Berlin received his medical degree from the Pontificia Universidad Católica de Chile and a Master of Science from the Institute of Medical Sciences, University of Toronto. We believe that Dr. Berlin's experience in the oncology field and in clinical research gives him the qualifications and skills to serve on our board of directors.

Alan L. Crane has served as a member of our board of directors since March 2003. Since February 2002, Mr. Crane has served as a partner and entrepreneur at Polaris Partners, a technology- and healthcare-focused venture capital firm. Since May 2011, he has served as Chairman of XTuit Pharmaceuticals, Inc., a privately held biotechnology company for which he also served as President and Chief Executive Officer from May 2011 to September 2015. From April 2013 to September 2014, Mr. Crane was the President of Arsia Therapeutics, Inc., a privately held biotechnology company. He also served from 2005 to 2009 as the Chief Executive Officer of Cerulean Pharma Inc., which became known in 2017 as Daré Bioscience Operations, Inc. in connection with a business combination, or Daré, and on the board of directors until July 2017. From 2002 to 2006, Mr. Crane served as the President and Chief Executive Officer of Momenta Pharmaceuticals, Inc., and prior to joining Polaris Partners as the Senior Vice President of Global Corporate Development at Millennium Pharmaceuticals, Inc. Mr. Crane serves on the board of multiple privately held life science companies. Previously, he served on the boards of Cerulean (now Daré), T2 Biosystems, Inc., Momenta, Sirtris Pharmaceuticals, Inc. (acquired by GlaxoSmithKline), Adnexus Therapeutics, Inc. (acquired by Bristol Myers Squibb), Ocular Therapeutix, Inc. and Hydra Biosciences, Inc. Mr. Crane received a B.A., an M.A. and an MBA from Harvard University. We believe that Mr. Crane's experience in the venture capital industry, his experience as an executive at other successful life science companies, and his service as a director and chief executive officer of other publicly traded and privately held life science companies give him the qualifications and skills to serve on our board of directors.

Jacob B. Frieberg has served as a member of our board of directors since February 2015. Mr. Frieberg has also served as a principal at The WTF Group, a Toronto-based property management company, since founding the company in 1984. Prior to that time, he was the Vice President at Rockford Developments, a Calgary-based multi-family building company. Mr. Frieberg received a B.A. in Economics from the University of Western Ontario. We believe that Mr. Frieberg's experience in business, including his management responsibility, gives him the qualifications, skills and financial expertise to serve on our board of directors.

J. Jeffrey Goater has served as a member of our board of directors since May 2013. Since February 2018, Mr. Goater has served as the Chief Executive Officer and a director of Surface Oncology, Inc., a privately held immunotherapeutics company, and from February 2017 through February 2018 served as Surface's Chief Business Officer. From 2013 to 2016, Mr. Goater served as Vice President of Business Development and then Senior Vice President, Finance and Business Development at Voyager Therapeutics, Inc., a publicly traded gene therapy company. Prior to that time, he was the Vice President of Business Development at Voyager since September 2013. From April 2013 to July 2013, Mr. Goater was the Vice President, Head of Business Development at Synageva BioPharma Corp., a biopharmaceutical company. From April 2008 to April 2013, he worked for Evercore Partners Inc., a publicly traded investment banking advisory firm, serving first as Vice President, Healthcare Strategic Advisory and then from January 2013 to April 2013, as a managing director. Prior to joining Evercore, Mr. Goater served as the Vice President, Pharmaceutical Equity Research at Cowen and Company, and as a business development consultant and acting Chief Executive Officer of LAGeT, Inc. Mr. Goater received a B.A., an M.S. and an MBA from the University of Rochester. We believe that Mr. Goater's experience as a finance and business development executive in the pharmaceutical industry and his experience in investment banking give him the qualifications and skills to serve on our board of directors.

Bala S. Manian, Ph.D. has served as a member of our board of directors since December 2004. Dr. Manian has also served as chairman of the board of directors of ReaMetrix Inc., a privately held biotechnology company,

since founding the company in 2004. He also currently serves as a director of Syngene International Limited, a publicly traded Indian biotechnology company, and previously served as a director of Biocon Ltd., a publicly traded Indian biopharmaceutical company. Dr. Manian is a co-founder and director of Quantum Dot Corporation, a privately held bioscience company, and a co-founder of SurroMed, Inc., a privately held biotechnology company, and serves as a director at other life sciences companies. He was also the founder and chairman of the board of directors of Lumisys Incorporated, a medical imaging company acquired by Eastman Kodak Co., the founder and chairman of the board of directors of Molecular Dynamics Incorporated, a life science instrumentation company acquired by APBiotech Inc., and the founder and chairman of the board of directors of Biometric Imaging Inc., a privately held biotechnology company. Dr. Manian received a B.S. in Physics from the University of Madras, an M.S. in Applied Optics from the University of Rochester and a Ph.D. in Mechanical Engineering from Purdue University. We believe that Dr. Manian's experience as a founder of numerous biotechnology companies and his service as a director of other publicly traded and privately held life science companies give him the qualifications and skills to serve on our board of directors.

Gerald E. Van Strydonck has served as a member of our board of directors since March 2003. Since August 2008, Mr. Van Strydonck has served as the Chief Financial Officer of Colgate Rochester Crozer Divinity School. Since October 2006, he has also served as a contract Chief Financial Officer of Logical Images, Inc., a privately held medical technology company. Mr. Van Strydonck was previously the Senior Vice President and Chief Financial Officer of Sigma Marketing LLC, the Senior Vice President and Chief Financial Officer of Essex Partners Inc., and a managing partner at PricewaterhouseCoopers LLP. Mr. Van Strydonck has also served on the boards of other privately held companies. Mr. Van Strydonck received a B.B.A. from St. John Fisher College and an MBA from the State University of New York at Buffalo. We believe that Mr. Van Strydonck's experience in public accounting and as a Chief Financial Officer of various companies and his service as a director give him the qualifications, skills and financial expertise to serve on our board of directors.

Barbara Yanni has served as a member of our board of directors since February 2015. Ms. Yanni was Vice President and Chief Licensing Officer at Merck & Co., Inc., a publicly traded pharmaceutical company, from November 2001 until her retirement in March 2014. Prior to this, Ms. Yanni served in various roles at Merck including in corporate development, financial evaluation and tax. She currently serves on the boards of Trevena, Inc., a publicly traded biopharmaceutical company, and also serves on the board of a privately held biopharmaceutical company, Symic Bio, Inc. Ms. Yanni received an A.B. from Wellesley College, a J.D. from Stanford Law School and an LL.M. from New York University. We believe that Ms. Yanni's experience in biotechnology and pharmaceutical business evaluation and transaction execution, her financial and general business knowledge, and her service as a director of other publicly traded and privately held life science companies give her the qualifications, skills and financial expertise to serve on our board of directors.

Executive Officers

Maurice Zauderer, Ph.D. has served as our President and Chief Executive Officer and a member of our board of directors since our inception in April 2001. Prior to founding the company, Dr. Zauderer was an Associate Professor at the University of Rochester and has also held senior faculty positions at Columbia University. During his academic career, Dr. Zauderer held the position of visiting scientist at the Laboratory of Cell Biology, the Ontario Cancer Institute and the National Cancer Institute. Dr. Zauderer received a B.S. in Physics from Yeshiva University and a Ph.D. in Cell Biology from the Massachusetts Institute of Technology. We believe that Dr. Zauderer's experience as an executive officer and his knowledge in biological sciences, immunology and oncology give him the qualifications and skills to serve on our board of directors.

Scott E. Royer, CFA, MBA has served as our Chief Financial Officer since February 2018. From 2008 to 2018, Mr. Royer was the Chief Financial Officer and Director of Finance of the Medical Films Group of Carestream Health, a medical and dental imaging company and an independent subsidiary of Onex Corporation, a Canadian publicly traded private equity investment firm. In this position, Mr. Royer provided financial, analytical, and decision-making support to the management team, and coordinated strategic plans and

expenditure controls. Mr. Royer received a B.S. in Accounting from the State University of New York College at Genesco, an MBA from Rochester Institute of Technology, and an Executive MBA from Villanova University, and is a credentialed Chartered Financial Analyst (CFA).

Raymond E. Watkins has served as our Senior Vice President and Chief Operating Officer since January 2006. Mr. Watkins previously served as our Vice President and Operations Officer from July 2001 to January 2006. Prior to joining us, Mr. Watkins served in various roles in operations and manufacturing at Life Technologies, Inc., a privately held life science company, which merged with Invitrogen Corporation in September 2000.

John E. Leonard, Ph.D. has served as our Senior Vice President, Development since January 2009. Prior to joining us, Dr. Leonard served as a principal at John Leonard Consulting, LLC from September 2005 to January 2009. From February 2003 until September 2009, he was the Vice President, Program Executive of Biogen Idec, Inc., a publicly traded biotechnology company, and from August 1988 until January 2003 he served in various roles in product development, regulatory affairs and quality assurance at IDEC Pharmaceuticals Corporation, which merged with Biogen, Inc. to form Biogen Idec, Inc. Dr. Leonard received a B.S. in Chemistry and an M.S. in Chemistry and Biochemistry from California State University, Long Beach, and a Ph.D. in Biochemistry from the University of California, Riverside.

Ernest S. Smith, Ph.D. has served as our Senior Vice President, Research and Chief Scientific Officer since December 2008. Dr. Smith previously served as our Vice President, Research and Chief Scientific Officer from April 2003 to December 2008 and our Research Director from June 2001 to April 2003. Prior to joining us, Dr. Smith was a research scientist at the University of Rochester. Dr. Smith received a B.A. in Biology from St. John Fisher College, and an M.S. and a Ph.D. in Immunology from the University of Rochester.

Composition of the Board of Directors

Our amended and restated bylaws provide that the size of our board of directors will be determined from time to time by resolution of our board of directors. Our board of directors currently consists of nine directors, seven of whom qualify as independent directors under the rules and regulations of the SEC and The NASDAQ Stock Market.

Election of Directors

Immediately after the completion of this offering, our amended and restated certificate of incorporation will provide for a classified board of directors consisting of three classes of directors. We will have three directors in each of Class I, Class II and Class III, each serving a staggered three-year term. At each annual meeting of stockholders, our stockholders will elect successors to directors whose terms then expire to serve from the time of election and qualification until the third annual meeting following election. After the completion of this offering, our directors will be divided among the three classes as follows:

- Class I directors will be Messrs. Crane and Goater and Dr. Manian, and their terms will expire at the annual meeting of stockholders to be held in 2019;
- Class II directors will be Dr. Berlin, Mr. Van Strydonck and Ms. Yanni, and their terms will expire at the annual meeting of stockholders to be held in 2020; and
- Class III directors will be Messrs. Frieberg and Friedberg and Dr. Zauderer, and their terms will expire at the annual meeting of stockholders to be held in 2021.

The classification of our board of directors may have the effect of delaying or preventing changes in control of our company. We expect that additional directorships resulting from an increase in the number of directors, if any, will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors.

Independence of the Board of Directors and Board Committees

Rule 5605 of the NASDAQ Marketplace Rules, or the NASDAQ Listing Rules, requires that independent directors compose a majority of a listed company's board of directors. In addition, the NASDAQ Listing Rules require that, subject to specified exceptions, each member of a listed company's audit, compensation, and nominating and corporate governance committees be independent and that audit committee members also satisfy independence criteria set forth in Rule 10A-3 under the Exchange Act. Under NASDAQ Listing Rule 5605(a)(2), a director will only qualify as an "independent director" if, in the opinion of our board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In order to be considered independent for purposes of Rule 10A-3 under the Exchange Act, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors or any other board committee: (1) accept, directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries; or (2) be an affiliated person of the listed company or any of its subsidiaries. In addition to satisfying general independence requirements under the NASDAQ Listing Rules, members of a compensation committee must also satisfy additional independence requirements set forth in Rule 10C-1 under the Exchange Act and NASDAQ Listing Rule 5605(d)(2). Pursuant to Rule 10C-1 under the Exchange Act and NASDAQ Listing Rule 5605(d)(2), in affirmatively determining the independence of a member of a compensation committee of a listed company, the board of directors must consider all factors specifically relevant to determining whether that member has a relationship with the company which is material to that member's ability to be independent from management in connection with the duties of a compensation committee member, including: (1) the source of compensation of such member, including any consulting, advisory or other compensatory fee paid by the company to such member; and (2) whether such member is affiliated with the company, a subsidiary of the company or an affiliate of a subsidiary of the company.

In , our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family and other relationships, including those relationships described under "Certain Relationships and Related Person Transactions," our board of directors determined that none of our directors, other than Mr. Friedberg and Dr. Zauderer, has a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is "independent" as that term is defined under Rule 5605(a)(2) of the NASDAQ Listing Rules. In making these determinations on the independence of our directors, our board of directors considered the relationships that each such non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director.

Board Leadership Structure and the Role of the Board in Risk Oversight

Board Leadership Structure

The positions of our chairman of the board and Chief Executive Officer are separated. Separating these positions allows our Chief Executive Officer to focus on our day-to-day business, while allowing the chairman of the board to lead our board of directors in its fundamental role of providing advice to and independent oversight of management. Our board of directors recognizes the time, effort and energy that the Chief Executive Officer must devote to his position in the current business environment, as well as the commitment required to serve as our chairman, particularly as our board of directors' oversight responsibilities continue to grow. Our board of directors also believes that this structure ensures a greater role for the independent directors in the oversight of the company and active participation of the independent directors in setting agendas and establishing priorities and procedures for the work of our board of directors.

Although our amended and restated bylaws that will be in effect immediately after the completion of this offering will not require that we separate the chairman of the board and Chief Executive Officer positions, our

board of directors believes that having separate positions is the appropriate leadership structure for us at this time. Our board recognizes that depending on the circumstances, other leadership models, such as combining the role of chairman of the board with the role of Chief Executive Officer, might be appropriate. Accordingly, our board may periodically review its leadership structure. Our board of directors believes its administration of its risk oversight function has not affected its leadership structure.

Our chairman of the board is Mr. Friedberg. Because our board of directors has not determined that Mr. Friedberg is independent, we have designated Mr. Frieberg as our lead director. The board of directors believes our leadership structure is appropriately balanced by the designation of a lead director role. The lead director is selected from among our independent directors. The lead director has the responsibilities as set forth in our corporate governance guidelines.

Our independent directors will meet alone in executive session at least quarterly each year. The purpose of these executive sessions is to promote open and candid discussion among the independent directors.

Role of the Board in Risk Oversight

We face a number of risks, including those described under the caption “Risk Factors” contained elsewhere in this prospectus. Our board of directors believes that risk management is an important part of establishing, updating and executing on the company’s business strategy. Our board of directors, as a whole and at the committee level, has oversight responsibility relating to risks that could affect the corporate strategy, business objectives, compliance, operations, and the financial condition and performance of the company. Our board of directors focuses its oversight on the most significant risks facing the company and on its processes to identify, prioritize, assess, manage and mitigate those risks. Our board of directors and its committees receive regular reports from members of the company’s senior management on areas of material risk to the company, including strategic, operational, financial, legal and regulatory risks. While our board of directors has an oversight role, management is principally tasked with direct responsibility for management and assessment of risks and the implementation of processes and controls to mitigate their effects on the company.

The audit committee, as part of its responsibilities, oversees and discusses with management, at least annually, the company’s policies with respect to risk assessment and risk management. The audit committee is also responsible for overseeing and discussing with management the company’s significant financial and operational risk exposures, including but not limited to accounting matters, liquidity and credit risks, corporate tax positions, insurance coverage, and cash investment strategy and results, and the actions management has taken to limit, monitor or control such exposures. The compensation committee is responsible for overseeing and reviewing with management the company’s major compensation-related risk exposures, reviewing and discussing, at least annually, the relationship between risk management policies and practices and compensation, and evaluating the steps management has taken to monitor or mitigate such exposures, including risks related to executive compensation and overall compensation and benefit strategies, plans, arrangements, practices and policies. The nominating and corporate governance committee oversees and reviews with management the company’s major legal compliance risk exposures and the steps management has taken to monitor or mitigate such exposures, including the company’s procedures and any related policies with respect to risk assessment and risk management. These committees provide regular reports to the full board of directors.

Committees of the Board

Our board of directors has a standing audit committee, compensation committee and nominating and corporate governance committee. The composition and responsibilities of each committee are described below. Members serve on these committees until their resignation or until otherwise determined by our board.

Audit Committee

The audit committee is responsible for assisting our board of directors in its oversight of the integrity of our financial statements, the qualifications and independence of our independent auditors, and our internal financial

and accounting controls. The audit committee has direct responsibility for the appointment, compensation, retention (including termination) and oversight of our independent auditors, and our independent auditors report directly to the audit committee. The audit committee also prepares the audit committee report that the SEC requires to be included in our annual proxy statement.

The members of the audit committee are Messrs. Van Strydonck and Frieberg and Ms. Yanni, and Mr. Van Strydonck serves as chair of the audit committee. Each member of the audit committee qualifies as an independent director under the corporate governance standards of the NASDAQ Listing Rules and the independence requirements of Rule 10A-3 of the Exchange Act. Our board of directors has determined that Mr. Van Strydonck qualifies as an "audit committee financial expert" as such term is currently defined in Item 407(d)(5) of Regulation S-K. The audit committee has adopted a written charter that satisfies the applicable standards of the SEC and the NASDAQ Listing Rules, which we will post on our website upon completion of this offering.

Compensation Committee

The compensation committee approves the compensation objectives for the company, and the compensation of the Chief Executive Officer and other executives. The compensation committee reviews all compensation components, including base salary, bonus, benefits and other perquisites.

The members of the compensation committee are Ms. Yanni, Dr. Berlin and Messrs. Frieberg and Goater, and Ms. Yanni serves as chair of the compensation committee. Each member of the compensation committee is a non-employee director within the meaning of Rule 16b-3 of the rules promulgated under the Exchange Act and an outside director as defined by Section 162(m) of the Code. Each member of the compensation committee is an independent director as defined by the NASDAQ Listing Rules, including NASDAQ Listing Rule 5605(d)(2). The compensation committee has adopted a written charter that satisfies the applicable standards of the SEC and the NASDAQ Listing Rules, which we will post on our website upon completion of this offering.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is responsible for making recommendations to our board of directors regarding candidates for directorships and the structure and composition of our board and the board committees. In addition, the nominating and corporate governance committee is responsible for developing and recommending to our board corporate governance guidelines applicable to the company and advising our board on corporate governance matters.

The members of the nominating and corporate governance committee are Mr. Goater, Dr. Manian and Ms. Yanni, and Mr. Goater serves as chair of the nominating and corporate governance committee. Each member of the nominating and corporate governance committee is a non-employee director within the meaning of Rule 16b-3 of the rules promulgated under the Exchange Act. Each member of the nominating and corporate governance committee is an independent director as defined by the NASDAQ Listing Rules. The nominating and corporate governance committee has adopted a written charter that satisfies the applicable standards of the NASDAQ Listing Rules, which we will post on our website upon completion of this offering.

Code of Business Conduct and Ethics

We adopted a code of business conduct and ethics that applies to all of our directors, officers and employees, including those officers responsible for financial reporting. Upon completion of this offering, we will post the code of business conduct and ethics on our website. We intend to disclose future amendments to the code or any waivers of its requirements on our website to the extent permitted by the applicable rules and exchange requirements.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee has ever been an officer or employee of the company. None of our executive officers serves, or has served during the last three years, as a member of the board of directors, compensation committee or other board committee performing equivalent functions of any entity that has one or more executive officers serving as one of our directors or on our compensation committee.

EXECUTIVE AND DIRECTOR COMPENSATION

Executive Compensation

Summary Compensation Table

The following table sets forth information for the year ended December 31, 2017 regarding compensation awarded to or earned by our named executive officers.

Name and Principal Position	Year	Salary ($)	Bonus(1) ($)	Total ($)
Maurice Zauderer, Ph.D. *President and Chief Executive Officer*	2017	327,738	80,386	408,124
Raymond E. Watkins *Senior Vice President and Chief Operating Officer*	2017	229,074	32,666	261,740
Ernest S. Smith, Ph.D. *Senior Vice President, Research and Chief Scientific Officer*	2017	229,074	32,666	261,740

(1) Amounts represent discretionary cash bonuses paid in 2017. These amounts were paid in recognition of salary reductions undertaken in prior years.

Outstanding Equity Awards at Fiscal Year-End

The following table provides information regarding equity awards held by the named executive officers that were outstanding as of December 31, 2017.

	Option Awards			
	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Option Exercise Price ($/Sh)	Option Expiration Date
Maurice Zauderer, Ph.D.	180,000	–	1.00	12/23/2019
	25,897	–	1.49	3/31/2024
	25,897	–	1.49	6/30/2024
	19,950	13,304	0.71	12/23/2015
Raymond E. Watkins	368,048	–	0.71	12/22/2025
	27,705	18,472	0.71	12/23/2025
Ernest S. Smith, Ph.D.	407,298	–	0.71	12/22/2025
	30,660	20,441	0.71	12/23/2025

Employment Contracts, Termination of Employment, Change-in-Control Arrangements

There are currently no employment agreements or other contracts or arrangements with our officers, directors or employees, except for standard form employee confidentiality and nondisclosure agreements with our employees, including Mr. Watkins and Dr. Smith. There are no compensation plans or arrangements, including payments to be made by us, with respect to our officers, directors or employees that would result from the resignation, retirement or any other termination. There are no arrangements for our directors, officers, employees or consultants that would result from a change-in-control.

Other Benefits

Our named executive officers are eligible to participate in all of our employee benefit plans, such as medical, dental, vision, group life, short and long-term disability, and our 401(k) plan, in each case on the same basis as other employees, subject to applicable laws. We also provide vacation and other paid holidays to all employees, including our named executive officers. We believe these benefits are important to attracting and retaining experienced executives. Like many private companies, we do not currently provide perquisites to our executive officers, given our attention to the cost-benefit tradeoff of such benefits, and the board of directors' knowledge of the benefit offerings at other private companies.

Equity Benefit Plans

2018 Omnibus Incentive Plan

Prior to the completion of this offering, our board of directors will adopt, and we expect our stockholders to approve, our 2018 Plan. We believe adoption and maintenance of the 2018 Plan will help us attract and retain executive officers, other employees and service providers, as well as our non-employee directors. We believe that awarding grants to our executive officers and others will stimulate their efforts toward our continued success, long-term growth and profitability. The 2018 Plan will provide for the grant of stock options, stock appreciation rights, restricted stock, unrestricted stock, stock units, dividend equivalent rights, other equity-based awards and cash bonus awards. We will reserve shares of common stock for issuance pursuant to the 2018 Plan, subject to certain adjustments set forth in the 2018 Plan. Any shares of common stock related to awards outstanding under the 2011 Plan upon completion of this offering, which thereafter terminate by expiration, forfeiture, cancellation or otherwise without the issuance of such shares will be added to, and included in, the 2018 Plan reserve amount. In addition, effective January 1, 2020 and continuing until the expiration of the 2018 Plan, the number of shares of common stock available for issuance under the 2018 Plan will automatically increase annually by the lesser of (i) % of the total number of issued and outstanding shares of our common stock as of December 31 of the immediately preceding year or (ii) shares of our common stock, except that our board of directors may act prior to January 1 of any calendar year to provide for an increase of a lesser number of shares (which may be zero). This summary is qualified in its entirety by the detailed provisions of the 2018 Plan, which is filed as an exhibit to the registration statement of which this prospectus is a part.

Administration of the 2018 Plan. Our compensation committee will administer and determine all terms of awards under the 2018 Plan. Each member of our compensation committee who administers the 2018 Plan will be both a "non-employee director" within the meaning of Rule 16b-3 of the Exchange Act, and an "outside director" within the meaning of Section 162(m) of the Code. Our compensation committee will also determine who will receive awards under the 2018 Plan, the type of award and its terms and conditions and the number of shares of our common stock subject to the award, if the award is equity-based. Our compensation committee will also interpret the provisions of the 2018 Plan. During any period of time in which we do not have a compensation committee, our board of directors or another committee appointed by our board of directors will administer the 2018 Plan. References below to the compensation committee include a reference to the board of directors or another committee appointed by the board of directors for those periods in which the board of directors or such other committee appointed by the board of directors is acting.

Eligibility. All of our employees and the employees of our affiliates will be eligible to receive awards under the 2018 Plan. In addition, our non-employee directors and consultants and advisors who perform services for us and our affiliates may receive awards under the 2018 Plan, other than incentive stock options.

Share Authorization. We will reserve shares of common stock for issuance under the 2018 Plan. In connection with stock splits, dividends, recapitalizations and certain other events, our board of directors will make proportionate adjustments that it deems appropriate in the aggregate number of shares of common stock that we may issue under the 2018 Plan and the terms of outstanding awards. If any shares of stock covered by an

award granted under the 2018 Plan or the 2011 Plan are not purchased or are forfeited or expire, or if an award otherwise terminates without delivery of any shares of stock subject thereto, or is settled in cash in lieu of shares of stock, then the number of shares of stock counted against the aggregate number of shares of stock available under the 2018 Plan with respect to such award will again be available for making awards under the 2018 Plan.

Stock Options. The 2018 Plan will authorize our compensation committee to grant incentive stock options (under Section 421 of the Code) and stock options that do not qualify as incentive stock options, or non-qualified stock options. A total of shares of stock available for issuance under the 2018 Plan will be available for issuance pursuant to incentive stock options. The compensation committee will determine the exercise price of each stock option, provided that the price will be equal to at least the fair market value of the shares of common stock on the date on which the stock option is granted. If we were to grant incentive stock options to any 10% stockholder, the exercise price may not be less than 110% of the fair market value of our shares of common stock on the date of grant.

The term of a stock option cannot exceed 10 years from the date of grant. If we were to grant incentive stock options to any 10% stockholder, the term cannot exceed five years from the date of grant. The compensation committee will determine at what time or times each stock option may be exercised and the period of time, if any, after retirement, death, disability or termination of employment during which stock options may be exercised. Stock options may be made exercisable in installments. The compensation committee may accelerate the exercisability of stock options. The compensation committee may not, without stockholder approval, reduce the exercise price of a stock option after the grant of the stock option, cancel an outstanding stock option in exchange for or substitution of a new stock option having an exercise price below that of the stock option that was surrendered, or cancel an outstanding stock option with an exercise price above the current share price in exchange for cash or other securities.

The aggregate fair market value, determined at the time of grant, of our common stock with respect to incentive stock options that are exercisable for the first time by an optionee during any calendar year under all of our stock plans may not exceed $100,000. We will generally treat stock options or portions thereof that exceed such limit as non-qualified stock options.

Stock Appreciation Rights. The 2018 Plan will authorize our compensation committee to grant stock appreciation rights that provide the recipient with the right to receive, upon exercise of the stock appreciation right, cash, shares of common stock or a combination of the two. The amount that the recipient will receive upon exercise of the stock appreciation right generally will equal the excess of the fair market value of our common stock on the date of exercise over the shares' fair market value on the date of grant. Stock appreciation rights will become exercisable in accordance with terms determined by our compensation committee. Stock appreciation rights may be granted in tandem with a stock option grant or independently from a stock option grant. The term of a stock appreciation right cannot exceed 10 years from the date of grant.

Stock Awards. The 2018 Plan will also provide for the grant of stock awards (which includes restricted stock and unrestricted stock). A stock award is an award of shares of common stock that may be subject to restrictions on transferability and other restrictions as our compensation committee determines in its sole discretion on the date of grant. The restrictions, if any, may lapse over a specified period of time or through the satisfaction of conditions, in installments or otherwise, as our compensation committee may determine. A participant who receives a restricted stock award will have all of the rights of a stockholder as to those shares, including the right to vote and the right to receive dividends or distributions on the shares, except that the board of directors may require any dividends to be reinvested in shares. During the period, if any, when stock awards are non-transferable or forfeitable, a participant is prohibited from selling, transferring, assigning, pledging or otherwise encumbering or disposing of his or her award shares.

Stock Units. The 2018 Plan will also authorize our compensation committee to grant stock units. Stock units represent the participant's right to receive a compensation amount, based on the value of the shares of common

stock, if vesting criteria established by the compensation committee are met. If the vesting criteria are met, we will pay stock units in cash, shares of common stock or a combination of the two.

Bonuses. Under the 2018 Plan, we may provide for performance-based bonuses payable in cash upon the attainment of performance goals that the compensation committee establishes relate to one or more performance criteria described in the 2018 Plan. Like other performance-based awards, cash performance bonuses, for which there is no minimum payout, must be based upon objectively determinable bonus formulas established in accordance with the 2018 Plan, as determined by the compensation committee.

Dividend Equivalents. Our compensation committee may grant dividend equivalents in connection with the grant of any equity-based award other than stock options and appreciation rights. Dividend equivalents may be paid currently or may be deemed to be reinvested in additional shares of stock, which may thereafter accrue additional equivalents, and may be payable in cash, shares of common stock or a combination of the two. Our compensation committee will determine the terms of any dividend equivalents.

Performance Awards. The 2018 Plan will permit the grant of performance-based stock and cash awards. Under the 2018 Plan, our compensation committee may structure such awards so that stock is issued or cash is paid pursuant to such award only upon achievement of the performance goals set by our compensation committee at the beginning of the designated performance period.

We may select performance goals based on one or more of the following measures: (1) net earnings or net income; (2) operating earnings; (3) pretax earnings; (4) earnings per share of stock; (5) stock price, including growth measures and total stockholder return; (6) earnings before interest and taxes; (7) earnings before interest, taxes, depreciation and/or amortization; (8) sales or revenue growth, whether in general, by type of product or service, or by type of customer; (9) gross or operating margins; (10) return measures, including return on assets, capital, investment, equity, sales or revenue; (11) cash flow, including operating cash flow, free cash flow, cash flow return on equity and cash flow return on investment; (12) productivity ratios; (13) expense targets; (14) market share; (15) financial ratios as provided in credit agreements of the company and its subsidiaries; (16) working capital targets; (17) completion of acquisitions of business or companies; (18) completion of divestitures and asset sales; (19) revenues under management; (20) funds from operations; (21) results of preclinical testing; (22) successful implementation of clinical trials, including components thereof; (23) submitting regulatory filings; (24) obtaining regulatory or marketing approvals; (25) entering into contractual agreements; (26) meeting contractual requirements; (27) achieving contractual milestones; (28) entering into collaborations; (29) receipt of grant funding; (30) developing or expanding manufacturing or production capacity; and (31) any combination of any of the foregoing business criteria.

We may base performance goals on a company-wide basis, with respect to one or more business units, divisions, affiliates or business segments, and in either absolute terms or relative to the performance of one or more comparable companies or the performance of one or more relevant indices. We may not adjust upward any awards that we intend to qualify as performance-based compensation. The plan administrator will retain the discretion to adjust performance-based awards downward, either on a formula or discretionary basis, or any combination as the compensation committee determines. Performance goals may differ from participant to participant and from award to award.

Other Equity-Based Awards. Our compensation committee may grant other types of equity-based awards under the 2018 Plan. Other equity-based awards may be payable in cash, shares of common stock or other equity, or a combination thereof, and may be restricted or unrestricted, as determined by our compensation committee. The terms and conditions that apply to other equity-based awards are determined by the compensation committee.

Change in Control. If we experience a change in control in which outstanding equity-based awards will not be assumed or continued by the surviving entity, unless otherwise provided in an award agreement, all restricted

shares, stock units and dividend equivalents will vest, and the underlying shares will be delivered immediately before the change in control. In addition, all stock options and stock appreciation rights will become exercisable 15 days before the change in control and terminate upon the consummation of the change in control, or, at the discretion of our board of directors, all stock options, stock appreciation rights, restricted shares and stock units may be canceled before the change in control in exchange for payment of any amount in cash or securities having a value (as determined by our board of directors), in the case of restricted shares or stock units equal to the formula or fixed price per share paid to our stockholders and, in the case of stock options and stock appreciation rights equal to the product of the number of shares subject to the stock option or stock appreciation right multiplied by the amount by which the formula or fixed price paid to our stockholders exceeds the exercise price of the stock option or the stock appreciation right. In the case of performance awards denominated in shares or units, if more than half of the performance period has lapsed, the awards will be converted into shares or units based upon actual performance achieved to date. If less than half of the performance period has lapsed, or if we cannot determine actual performance, the awards will be converted into shares or units assuming target performance has been achieved.

Amendment; Termination. Our board of directors may amend or terminate the 2018 Plan at any time; provided that no amendment may adversely impair the rights of participants with outstanding awards. Our stockholders must approve any amendment if such approval is required under applicable law or NASDAQ Listing Rules. Unless terminated sooner by our board of directors or extended with stockholder approval, the 2018 Plan will terminate on the 10th anniversary of the date on which our stockholders approve the 2018 Plan.

2011 Employee Equity Plan

General. In December 2011, our board of directors adopted our 2011 Plan as a successor to and continuation of our 2001 Plan, and in June 2012, our stockholders approved our 2011 Plan. A committee of our board of directors administers the 2011 Plan. Our board of directors has determined not to grant any additional awards under the 2011 Plan after the completion of this offering. However, the 2011 Plan will continue to govern the terms and conditions of the outstanding awards granted under the 2011 Plan.

Share Reserve. As of December 31, 2017, a total of shares of our common stock had been authorized for issuance under the 2011 Plan. As of December 31, 2017, stock options to purchase a total of shares of our common stock were issued and outstanding, and shares remained available for future grant. Upon completion of this offering, no additional awards may be granted under the 2011 Plan.

Types of Awards. Our 2011 Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights and rights to acquire restricted stock to our key employees, non-employee directors and consultants. Our 2011 Plan provides for the grant of incentive stock options, within the meaning of Section 422 of the Code, only to our key employees or any of our "parent corporations" or "subsidiary corporations" (as such terms are defined in Sections 424(e) and (f) of the Code). The administrator of the 2011 Plan has the authority to determine the terms and conditions of the awards granted under the 2011 Plan.

Our 2011 Plan does not allow for the transfer of awards other than by will or the laws of descent and distribution. Only the recipient of a stock option or stock appreciation right or a permitted transferee may exercise such award during his or her lifetime. The administrator, however, may in its discretion consent to certain transfers that are permitted by applicable tax and securities laws.

Change in Control. In connection with a change in control, as defined in the 2011 Plan, the administrator may accelerate the exercisability and vesting of any or all outstanding awards, or cancel any or all outstanding awards in exchange for payment in cash, stock or other property. Our 2011 Plan also provides that in the event of a change in control, the successor corporation or its parent may assume or substitute for each outstanding award. If the outstanding awards are not exercised, assumed or substituted as of the consummation of the change in control, such awards will terminate upon the consummation of the change in control.

2001 Employee Equity Plan

General. In May 2001, our board of directors adopted our 2001 Plan, and in May 2001, our stockholders approved our 2001 Plan. A committee of our board of directors administers the 2001 Plan. The 2001 Plan was succeeded by our 2011 Plan and terminated on May 29, 2011. Since the termination of the 2001 Plan, we may not grant any additional awards under the 2001 Plan. However, the 2001 Plan will continue to govern the terms and conditions of the outstanding awards granted under the 2001 Plan.

Share Reserve. As of December 31, 2017, stock options to purchase a total of shares of our common stock were issued and outstanding.

Types of Awards. Our 2001 Plan provided for the grant of incentive stock options, non-qualified stock options, stock appreciation rights and rights to acquire restricted stock to our key employees, non-employee directors and consultants. Our 2001 Plan provided for the grant of incentive stock options, within the meaning of Section 422 of the Code, only to our key employees or any of our "parent corporations" or "subsidiary corporations" (as such terms are defined in Sections 424(e) and (f) of the Code). The administrator of the 2001 Plan has the authority to determine the terms and conditions of the awards granted under the 2001 Plan.

Our 2001 Plan does not allow for the transfer of awards other than by will or the laws of descent and distribution. Only the recipient of a stock option or stock appreciation right or a permitted transferee may exercise such award during his or her lifetime. The administrator, however, may in its discretion consent to certain transfers that are permitted by applicable tax and securities laws.

Corporate Transaction. Our 2001 Plan provides that in certain events such as a merger or sale of our company, the administrator may accelerate the vesting, in whole or in part, of any or all outstanding stock options.

Severance Pay Plan

Our board of directors adopted a Severance Pay Plan, to become effective upon completion of this offering, that will provide severance benefits to eligible employees and officers (other than those individuals covered by a separate employment agreement, change in control agreement, or other agreement that provides severance benefits or that by its terms excludes such individual from participation in the Severance Pay Plan) whose employment is terminated without "cause" or by the employee or officer following (i) for officers only, a substantial adverse alteration in the officer's title or responsibilities, (ii) a forced reduction in annual base salary or material reduction in annual target bonus opportunity, or (iii) a forced relocation, in each case during the period commencing three months prior to a "change in control" and ending one year following the "change in control." Employees (other than officers) whose employment terminates under these circumstances will be entitled to a lump sum payment equal to two weeks' base salary, multiplied by the employee's whole years of service, but such severance payment shall not exceed 26 weeks of base salary, nor shall it be less than four weeks of base salary. Officers whose employment terminates under these circumstances are entitled to a lump sum payment equal to six months' base salary. Our board of directors has the ability to amend the Severance Pay Plan, including to increase the amounts employees or officers receive as severance. In the event that any amounts payable under this plan would be subject to an excise tax by reason of Section 4999 of the Code, then such amounts either shall be paid in full or shall be reduced to the extent necessary for such payments not to be subject to an excise tax by reason of Section 4999 of the Code, whichever approach results in the applicable employee or officer receiving a greater amount on a net after-tax basis.

401(k) Retirement Plan

We maintain a defined contribution retirement plan for our employees. Our 401(k) plan is intended to qualify as a tax-qualified plan under Section 401 of the Code so that contributions to our 401(k) plan and income

earned on such contributions are not taxable to participants until withdrawn or distributed from the 401(k) plan. Our 401(k) plan provides that each participant may contribute up to 100% of his or her pre-tax compensation, up to a statutory limit of $18,500 for 2018. Participants who are at least 50 years old can also make "catch-up" contributions, which in 2018 may be up to an additional $6,000 above the statutory limit. Under our 401(k) plan, each employee is fully vested in his or her deferred salary contributions. Employee contributions are held and invested by the plan's trustee. Our 401(k) plan also permits us to make discretionary and matching contributions, subject to established limits and a vesting schedule. To date, we have not made any discretionary or matching contributions to the plan on behalf of participating employees.

Director Compensation

Cash and Equity Compensation

In , our board of directors approved a non-employee director compensation policy, which will be effective for all non-employee directors upon the completion of this offering. Each non-employee director will receive an annual cash retainer of $. Each non-employee director may elect to receive the annual base retainer in the form of stock options, provided such election is made in the calendar year preceding the year in which such compensation is earned. We will pay all amounts in quarterly installments.

In addition, each non-employee director, who became a director or will become a director after January 1, 2019, will receive a one-time initial award of stock options to purchase approximately $ (determined using the Black-Scholes method) of our common stock, which will vest commencing on the one year anniversary of the grant date in two equal annual installments, such that the stock option is fully vested on the second anniversary of the date of grant, subject to the director's continued service on the board of directors. Thereafter, each non-employee director will receive an annual award of stock options to purchase approximately $ (determined using the Black-Scholes method) of our common stock, which will fully vest on the earlier to occur of the one year anniversary of the date of grant and immediately prior to the next annual meeting of stockholders, subject to the director's continued service on the board of directors.

Director Compensation Tables

The table below sets forth information on the compensation of all our non-employee directors for the year ended December 31, 2017. Directors who are also our employees receive no additional compensation for their services as directors.

The following table sets forth information for the year ended December 31, 2017 regarding compensation awarded to or earned by our named executive officers.

Name	Year	Stock Option Awards(1) ($)	Total ($)
Albert D. Friedberg	2017	–	–
Alejandro M. Berlin, M.D., MSc(2)	2017	86,994	86,994
Alan L. Crane	2017	–	–
Jacob B. Frieberg(2)	2017	86,994	86,994
J. Jeffrey Goater(3)	2017	30,459	30,459
Bala S. Manian, Ph.D.	2017	–	–
Gerald E. Van Strydonck(4)	2017	86,994	86,994
Barbara Yanni(2)	2017	86,994	86,994

(1) The amounts in this column represent the aggregate grant date fair value of the stock options granted during calendar year 2017. The grant date fair value of the stock options was computed in accordance with FASB

ASC Topic 718. These amounts do not necessarily correspond to the actual value that may be realized by the executive in connection with his stock option awards. The assumptions made in valuing the stock option awards reported in this column are described in Note 10 to our consolidated financial statements.

(2) On September 15, 2017, each of Dr. Berlin, Mr. Frieberg and Ms. Yanni were granted stock options to purchase 63,966 shares of our common stock at an exercise price of $1.36 per share, which vested 2/3 upon grant and 1/3 on March 15, 2018.

(3) On September 15, 2017, Mr. Goater was granted a stock option to purchase 22,396 shares of our common stock at an exercise price of $1.36 per share, which vests in full on June 20, 2018, subject to Mr. Goater's continued service on the board of directors.

(4) On September 15, 2017, Mr. Van Strydonck was granted a stock option to purchase 63,966 shares of our common stock at an exercise price of $1.36 per share, which vested 2/3 upon grant and 1/3 on March 6, 2018.

The following table provides information regarding equity awards held by each non-employee director as of December 31, 2017:

Name	Stock Options Outstanding (#)
Albert D. Friedberg	–
Alejandro M. Berlin, M.D., MSc	63,966
Alan L. Crane	410,000
Jacob B. Frieberg	63,966
J. Jeffrey Goater	82,396
Bala S. Manian, Ph.D.	–
Gerald E. Van Strydonck	183,966
Barbara Yanni	63,966

Limitation of Liability and Indemnification Agreements

Our amended and restated certificate of incorporation and amended and restated bylaws, each to become effective immediately after the completion of this offering, provide that we will limit the liability of our directors, and may indemnify our directors and officers, to the maximum extent permitted by the DGCL. The DGCL provides that directors of a corporation will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except for liability for any:

- breach of their duty of loyalty to the corporation or its stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares; or
- transaction from which the directors derived an improper personal benefit.

These limitations of liability do not apply to liabilities arising under federal securities laws and do not affect the availability of equitable remedies such as injunctive relief or rescission.

We intend to enter into separate indemnification agreements with our directors and officers in addition to the indemnification provided for in our amended and restated bylaws. These indemnification agreements will provide, among other things, that we will indemnify our directors and officers for certain expenses, including damages, judgments, fines, penalties, settlements and costs and attorneys' fees and disbursements, incurred by a director or officer in any claim, action or proceeding arising in his or her capacity as a director or officer of our company or in connection with service at our request for another corporation or entity. The indemnification agreements also will provide for procedures that will apply in the event that a director or officer makes a claim for indemnification.

We also maintain a directors' and officers' insurance policy pursuant to which our directors and officers are insured against liability for actions taken in their capacities as directors and officers. We believe that these indemnification provisions and insurance are useful to attract and retain qualified directors and officers.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even though an action, if successful, might benefit us and our stockholders. A stockholder's investment may be harmed to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. Insofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, or the Securities Act, may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. There is no pending litigation or proceeding naming any of our directors or officers as to which indemnification is being sought, nor are we aware of any pending or threatened litigation that may result in claims for indemnification by any director or officer.

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

The following is a description of transactions, since January 1, 2015, to which we have been a party or will be a party, in which the amount involved exceeded or will exceed $120,000, and in which any of our executive officers, directors or holders of more than 5% of any class of our voting securities, or any affiliate or immediate family member thereof, had or will have a direct or indirect material interest, other than employment and compensation arrangements. We believe the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that we would pay or receive, as applicable, in arm's-length transactions with unrelated third parties.

Bridge Loan Agreements

Between August 2014 and January 2017, we entered into bridge loan agreements, or the Bridge Agreements, with certain investors, pursuant to which we received $19.9 million from FCMI Parent, our majority stockholder, which is controlled by Albert D. Friedberg, the chairman of our board of directors, and $13.6 million from Vaccinex (Rochester), L.L.C., or Vaccinex LLC, which is owned and controlled by Dr. Maurice Zauderer, our President, Chief Executive Officer and a member of our board of directors. Pursuant to the terms of the Bridge Agreements, we issued convertible promissory notes to the investors, including FCMI Parent and Vaccinex LLC, as described more fully below.

FCMI Parent Convertible Promissory Notes

Pursuant to the Bridge Agreements, we issued convertible promissory notes in an aggregate principal amount of $19.9 million to FCMI Parent. The largest aggregate principal amount of these convertible promissory notes outstanding since January 1, 2015 was $10.0 million, and $6.0 million principal amount and $13,000 of interest was paid during this period. The convertible promissory notes issued to FCMI Parent bore interest at a rate of 8% per annum, other than $4.0 million in convertible promissory notes issued to FCMI Parent pursuant to a January 2017 bridge loan agreement, or the January 2017 Notes, which bore no interest, and the remaining $6.0 million of the January 2017 Notes bore interest at a rate of 2% per annum. On March 8, 2018, $4.0 million of the January 2017 Notes were repaid in full.

In connection with the issuance of the January 2017 Notes, we also entered into the option arrangement with FCMI Parent that granted FCMI Parent an option to acquire shares of equity with a fair value of up to $4.0 million in the next Qualifying Financing, at a price per share equal to the conversion price of the January 2017 Notes, which option arrangement was later waived.

Vaccinex LLC Convertible Promissory Notes

Pursuant to the Bridge Agreements, we issued convertible promissory notes in an aggregate principal amount of $13.6 million to Vaccinex LLC. The largest aggregate principal amount of these convertible promissory notes outstanding since January 1, 2015 was $12.8 million, and $0.8 million principal amount and $7,000 of interest was paid during this period. The convertible promissory notes issued to Vaccinex LLC bore or bear interest at a rate of 8% per annum.

The only convertible promissory note outstanding as of April 13, 2018 is the June 2016 Note in the aggregate principal amount of $1.5 million. Upon the occurrence of certain default events, the interest rate of June 2016 Note increases to a compounded annual rate of 12% per annum. The June 2016 Note will mature on June 10, 2019 if not converted before then, including upon the occurrence of certain financing events, or a Qualified Financing. Pursuant to the terms of the June 2016 Note, upon the closing of this offering, the outstanding principal, together with accrued interest, of the June 2016 Note will convert into shares of our common stock at 85% of the initial public offering price per share of our common stock sold in this offering, or the Initial Offering Price. We may make the decision to repay the June 2016 Note and accrued interest with the proceeds from the offering.

Series D Redeemable Convertible Preferred Stock Financing

During 2016, we issued and sold an aggregate of 5,494,505 shares of our convertible Series D redeemable preferred stock to Antibody Investments LLC, a holder of more than 5% of our voting securities, for $10.0 million in aggregate cash consideration and on the same terms as available to the other cash purchasers participating in the offering. Additionally, in May, June and July 2017, we sold and issued an aggregate of 4,395,604 shares of our convertible Series D redeemable preferred stock to Mr. Friedberg for $8.0 million in aggregate cash consideration and on the same terms as prior purchasers of our convertible Series D redeemable preferred stock.

The sales of Series D redeemable convertible preferred stock in 2016 qualified as a Qualified Financing for certain then-outstanding convertible promissory notes held by FCMI Parent and Vaccinex LLC. As a result, outstanding principal and accrued interest of convertible promissory notes totaling $10.6 million for FCMI Parent and $12.6 million for Vaccinex LLC was converted into 6,836,890 and 8,157,067 shares of Series D redeemable convertible preferred stock, respectively, at $1.547 per share, or 85% of the Series D redeemable convertible preferred stock issuance price of $1.82 per share, as specified in each convertible bridge loan promissory note.

Vaccinex Products

Beginning in November 2009, we entered into financing arrangements with certain Canadian investors to advance the development of certain therapeutic monoclonal antibodies under development by us. In October 2014, we reorganized our then-existing that structure. As a result of the reorganization, FCMI Financial, a subsidiary of FCMI Parent, which is controlled by our chairman and major stockholder, Mr. Friedberg, holds 9,679,833 limited partnership interests of Vaccinex Products, a Delaware limited partnership and our 80% majority-owned subsidiary, and has the right to exchange those units for an equivalent number of shares of our common stock, and we have the right in certain circumstances to require the exchange of all units held by FCMI Financial and the other noncontrolling investors in Vaccinex Products for shares of our common stock.

Lease Agreement

We lease our corporate headquarters facility from 1895 Management, Ltd., or 1895 Management. Pursuant to the terms of the lease agreement, we paid 1895 Management an annual rental fee of $168,000 in 2016 and 2017. The lease agreement requires monthly rental payments of $14,000 through expiration of the lease on October 31, 2018. 1895 Management is a wholly owned, indirect subsidiary of FCMI Parent.

Surface Oncology, Inc.

In November 2017, we entered into a research collaboration and license option agreement with Surface to identify and select antibodies against two target antigens, using our proprietary technology as described in the agreement. J. Jeffrey Goater, a member of our board of directors, served as the Chief Business Officer of Surface at that time, and currently serves as the Chief Executive Officer and a director of Surface. Surface paid us an upfront payment of $250,000 in consideration for our entering into the agreement, and has agreed to pay us additional amounts in connection with research to be performed under the agreement and if it exercises its options to obtain exclusive licenses under the agreement.

VX3

In November 2017, we entered into the VX3 License Agreement with VX3, which was formed in October 2017 by a group of Canadian investors including FCMI Parent. Pursuant to the VX3 License Agreement, VX3 agreed to pay us up to an aggregate of $32.0 million in milestone payments and to share any VX15 profits and sublicensing revenue under the agreement in an amount based on a calculation set forth in the agreement. In

connection with the VX3 License Agreement, we also entered into the Services Agreement with VX3 effective as of January 1, 2017, pursuant to which we will carry out development activities for VX15 for the treatment of Huntington's disease in the U.S. and Canada in exchange for services payments from VX3, including a payment of $11.9 million for 2017. On February 28, 2018, the Services Agreement was amended to provide for an additional payment of $8.0 million from VX3 for services performed in 2018. The VX3 License Agreement provides that upon termination, we will issue to VX3 or its designees the number of shares of our common stock equal to the lesser of (1) the aggregate of all payments made to VX3 by the Canadian investors divided by $1.82 and (2) the then fair market value of VX3 divided by the then fair market value of one share of our common stock. We have determined VX3 to be a variable interest entity (VIE) in which we are the primary beneficiary.

Following payment of the amount owed to us pursuant to the amendment of the Services Agreement, a January 2017 Note in the aggregate principal amount of $4.0 million was repaid to FCMI Parent on March 8, 2018.

On March 16, 2018, we entered into an agreement with VX3 and its partners, including FCMI Parent, pursuant to which, immediately prior to the consummation of this offering, the parties will execute an exchange agreement in the form attached thereto providing each VX3 partner with the right to exchange all, but not less than all, of its partnership interests in VX3 for shares of our common stock. The exchange agreement will provide that in the event FCMI Parent exercises its option to exchange its VX3 partnership interests for shares of our common stock, it would trigger the exchange of all VX3 partnership interests for shares of our common stock. Further, under the exchange agreement, we will have a right to require the exchange of all partnership interests in VX3 for shares of our common stock in any of the following circumstances:

- we enter into a transaction such as a sale, merger or consolidation such that shares of our common stock are or will be sold or exchanged for cash and/or marketable securities;
- at any time on or after the fifth anniversary of the exchange agreement; or
- either we or VX3 enters into a licensing, partnering or similar transaction with respect to one or more products and indications licensed to VX3 by us, and all amounts then due and owing to VX3 in connection with such transaction have been paid to VX3.

Other Transactions

We intend to enter into indemnification agreements with our directors and officers. See the section entitled "Executive and Director Compensation–Limitation of Liability and Indemnification Agreements" located elsewhere in this prospectus.

Policies and Procedures Regarding Transactions with Related Persons

In , our board of directors adopted a written related person transaction policy that will be in effect upon completion of this offering. Accordingly, following this offering, all proposed related person transactions must be approved by either (i) our audit committee (or any other committee of the board consisting of independent directors) or (ii) our full board of directors. This review will cover any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we were or are to be a participant, the amount involved exceeds $120,000, and a related person had or will have a direct or indirect material interest, including purchases of goods or services by or from a related person in which the related person has a material interest, and indebtedness, guarantees of indebtedness and employment by us of a related person. A "related person" is any person who is or was one of our executive officers, directors or director nominees or is a holder of more than 5% of our common stock, or their immediate family members or any entity owned or controlled by any of the foregoing persons.

All of the transactions described above were entered into prior to the adoption of this policy and were approved by our board of directors.

PRINCIPAL STOCKHOLDERS

The following table sets forth certain information known to us regarding the beneficial ownership of our common stock as of March 23, 2018, as adjusted to reflect the sale of shares of common stock in this offering and the conversion of all outstanding shares of all series of our preferred stock, by:

- each of our named executive officers;
- each of our directors;
- all of our executive officers and directors as a group; and
- each person, or group of affiliated persons, known by us to beneficially own more than 5% of any class of our voting securities.

We have based our calculation of beneficial ownership prior to this offering on 11,025,717 shares of common stock outstanding on March 23, 2018, assuming the conversion of all outstanding shares of our preferred stock into an aggregate of 70,393,022 shares of our common stock. We have based our calculation of beneficial ownership after this offering on shares of our common stock outstanding immediately following the completion of this offering, which in addition to the foregoing assumptions also gives effect to the issuance of shares of common stock in this offering and to a -for- reverse stock split of our common stock. Ownership information assumes no exercise of the underwriters' over-allotment option.

Information with respect to beneficial ownership has been furnished to us by each director, executive officer or stockholder who holds more than 5% of any class of our voting securities, as the case may be. Beneficial ownership is determined according to the rules of the SEC and generally means that a person has beneficial ownership of a security if he or she possesses sole or shared voting or investment power of that security, and includes stock options to purchase shares of our common stock and limited partnership interests of Vaccinex Products that are currently exercisable or exchangeable, respectively, for shares of our common stock within 60 days of March 23, 2018. Stock options to purchase shares of our common stock and limited partnership interests that are exercisable or exchangeable within 60 days of March 23, 2018 are deemed to be beneficially owned by the persons holding them for the purpose of computing percentage ownership of that person, but are not treated as outstanding for the purpose of computing any other person's ownership percentage. Except as indicated in the footnotes below, each of the beneficial owners named in the table below has, and upon completion of this offering will have, to our knowledge, sole voting and investment power with respect to all shares of common stock listed as beneficially owned by him or her, except for shares owned jointly with that person's spouse or as otherwise noted. Unless otherwise indicated, the address for each of the stockholders in the table below is c/o Vaccinex, Inc., 1895 Mount Hope Avenue, Rochester, New York 14620.

Name of Beneficial Owner	Shares of Common Stock Beneficially Owned		Percentage of Shares Beneficially Owned	
	Before the Offering	After the Offering	Before the Offering	After the Offering
Named Executive Officers:				
Maurice Zauderer	14,440,005(1)	(1)	17.7%	
Raymond E. Watkins	474,253(2)		*	
Ernest S. Smith	597,958(3)		*	
Directors:				
Albert D. Friedberg	43,702,042(4)		48.0%	
Alejandro M. Berlin	63,966(5)		*	
Alan L. Crane	410,000(6)		*	
Jacob B. Frieberg	152,376(7)	(7)	*	
J. Jeffrey Goater	63,000(8)		*	
Bala S. Manian	–		–	
Gerald E. Van Strydonck	183,966(9)		*	
Barbara Yanni	63,966(10)		*	
All directors and executive officers as a group (13 persons)	60,424,132(11)	(11)	64.8%	
Greater than 5% Stockholders:				
FCMI Parent Co.(12)	38,707,214(12)	(12)	42.5%	
Antibody Investments, LLC(13)	18,956,043		23.3%	

* Represents beneficial ownership of less than 1% of our outstanding common stock.

(1) Includes (a) presently exercisable stock options for 251,744 shares of our common stock, (b) 1,177,610 shares and 1,167,130 shares of common stock held directly by the Jeremy Zauderer Trust and the Jordan Zauderer Trust, respectively, over which Dr. Zauderer exercises voting control, and (c) 8,157,067 shares held by Vaccinex LLC, of which Dr. Zauderer is the president and a majority owner. Amount after the offering includes shares issuable upon the upon the conversion of convertible promissory notes held by Vaccinex LLC.

(2) Includes presently exercisable stock options for 395,753 shares of our common stock.

(3) Includes presently exercisable stock options for 437,958 shares of our common stock.

(4) Includes shares held by FCMI Parent, a greater than 5% owner of our securities, as reported in the table and described in footnote 12 below. Also includes shares held by Pan Atlantic Bank & Trust Ltd., Vaccinex 2002 L.P. and Vaccinex GP, Ltd. Mr. Friedberg is the majority owner of FCMI Parent, Pan Atlantic Bank & Trust Ltd., Vaccinex 2002 L.P. and Vaccinex GP, Ltd. and he shares investment and voting power over our securities held by each of such entities.

(5) Includes presently exercisable stock options for 63,966 shares of our common stock.

(6) Includes presently exercisable stock options for 410,000 shares of our common stock.

(7) Includes presently exercisable stock options for 63,966 shares of our common stock and 88,410 shares issuable upon the exchange of limited partnership interests in Vaccinex Products, 44,205 of which are held by Benbow Estates, Ltd., an entity owned by Mr. Frieberg's wife and of which Mr. Frieberg is an officer. Amount after the offering includes shares issuable upon the exchange of partnership interests in VX3.

(8) Includes presently exercisable stock options for 60,000 shares of our common stock.

(9) Includes presently exercisable stock options for 183,966 shares of our common stock.

(10) Includes presently exercisable stock options for 63,966 shares of our common stock.

(11) Includes presently exercisable stock options for 2,193,779 shares of our common stock and 9,768,243 shares issuable upon the exchange of partnership interests in VX3.

(12) Includes 9,679,833 shares issuable upon the exchange of limited partnership interests in Vaccinex Products held by FCMI Financial, a subsidiary of FCMI Parent. Amount after the offering includes shares issuable upon the exchange of partnership interests in VX3. The address for FCMI Parent is 181 Bay Street, Suite 250, Toronto, Ontario Canada M5J 2T3.

(13) The address for Antibody Investments, LLC is 2088 Hawthorne Street, Sarasota, Florida 34239.

DESCRIPTION OF CAPITAL STOCK

Immediately after the completion of this offering, our amended and restated certificate of incorporation will authorize us to issue up to 100,000,000 shares of common stock, par value $0.0001 per share, and 10,000,000 shares of preferred stock, par value $0.001 per share. As of December 31, 2017, there were outstanding:

- shares of our common stock held by approximately stockholders, which gives effect to (i) conversion of all outstanding shares of our preferred stock into an aggregate of shares of our common stock, assuming such conversion occurred on December 31, 2017; (ii) repayment of the January 2017 Note, and waiver in March 2018 of the related option to participate in a future financing, assuming such repayment and waiver occurred on December 31, 2017; and (iii) conversion of the June 2016 Note and accrued interest into an aggregate of shares of our common stock, assuming such conversion occurred on December 31, 2017;
- shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, of which shares will be beneficially owned by FCMI Parent;
- shares of common stock issuable upon the exchange of limited partnership interests of VX3, of which shares will be owned by FCMI Parent; and
- shares of our common stock subject to outstanding stock options.

The following description of our capital stock is not complete and is subject to and qualified in its entirety by our amended and restated certificate of incorporation and amended and restated bylaws. Copies of these documents are filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part. The descriptions of our common stock and preferred stock reflect changes to our capital structure that will occur immediately in connection with the completion of this offering.

Common Stock

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders. The affirmative vote of holders of at least 66% of the voting power of all of the then outstanding shares of capital stock, voting as a single class, will be required to amend certain provisions of our amended and restated certificate of incorporation, including provisions relating to amending our amended and restated bylaws, the classified board, the size of our board, removal of directors, director liability, vacancies on our board, special meetings, stockholder notices, actions by written consent and exclusive jurisdiction.

Dividends

Subject to preferences that may apply to any outstanding preferred stock, holders of our common stock are entitled to receive ratably any dividends that our board of directors may declare out of funds legally available for that purpose.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preference of any outstanding preferred stock.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All outstanding shares of our common stock are fully paid and non-assessable, and the shares of common stock to be issued upon completion of this offering will be fully paid and non-assessable.

Preferred Stock

Immediately prior to the completion of this offering, all outstanding shares of our preferred stock will convert into shares of common stock. Upon completion of this offering, our board of directors will have the authority, without further action by our stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the number, rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences and sinking fund terms, and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control or other corporate action. We have no current plan to issue any shares of preferred stock.

Registration Rights

Following the completion of this offering, the holders of shares of our common stock outstanding as of December 31, 2017, including shares issuable upon conversion of our Series B-1, Series B-2, Series C and Series D redeemable convertible preferred stock and upon the conversion of the June 2016 Note and accrued interest, are entitled to certain "piggyback" registration rights. In the event that we propose to register any of our securities under the Securities Act in another offering, the holders of these shares are entitled to include their shares in such registration, subject to certain marketing limitations. From the time we complete this offering until the earlier of such time that all of the registrable shares (i) have been sold to third parties or (ii) cease to be restricted securities pursuant to Rule 144 of the Securities Act, we must give 30 days' notice to the holders of all registrable shares of any filing of a registration statement (other than on Form S-8 or its counterpart) covering any of our securities. Upon a holder's written request, we must include all or a portion of the holder's shares of common stock in the registration. Participating holders will not pay any expenses in connection with the registration other than fees of their own counsel and any applicable underwriting discounts and/or commissions.

Additionally, the holders of shares of our common stock outstanding as of December 31, 2017, including shares issuable upon conversion of our Series A convertible preferred stock and Series B redeemable convertible preferred stock, have the right to demand that we file a registration statement or request that we cover their shares by a registration statement that we otherwise file, as described below.

Demand Registration Rights

At any time after 180 days after the completion of this offering, holders of at least a majority of the registrable shares may request that we register all or a portion of their shares of common stock for sale under the Securities Act. The demand may be made only once and the aggregate price to the public in connection with any such offering must be at least $10.0 million. In addition, when we are eligible for the use of Form S-3, or any successor form, holders of at least a majority of the registrable shares may request that we register all or a portion of their shares of common stock for sale under the Securities Act on Form S-3, or any successor form, so long as the aggregate price to the public in connection with any such offering is at least $5.0 million. In the event that any registration in which the holders of registrable shares participate is an underwritten public offering, the number of registrable shares to be included may, in specified circumstances, be limited due to market conditions. In such situations, the participating holders of Series B redeemable convertible preferred stock will have senior cutback rights compared to the participating holders of Series A convertible preferred stock. The demand and Form S-3 registration rights will expire three years after our initial public offering.

Incidental Registration Rights

In addition, if at any time after this offering we register any shares of our common stock, the holders of Series A convertible preferred stock and Series B redeemable convertible preferred stock are entitled to "piggyback" registration rights and may include all or a portion of their shares of common stock in the registration. If the number of registrable shares to be included is limited due to market conditions, the holders of Series A convertible preferred stock and Series B redeemable convertible preferred stock will have pari passu cutback rights.

Other Provisions

We will pay all registration expenses related to any demand, piggyback and Form S-3 registration.

Anti-Takeover Provisions

Certificate of Incorporation and Bylaws to be in Effect Immediately Prior to Completion of this Offering

Our amended and restated certificate of incorporation and amended and restated bylaws, each to become effective immediately after the completion of this offering, will include a number of provisions that may deter or impede hostile takeovers or changes of control or management. These provisions include:

- *Issuance of undesignated preferred stock.* After the filing of our amended and restated certificate of incorporation, our board of directors will have the authority, without further action by the stockholders, to issue up to 10,000,000 shares of undesignated preferred stock with rights and preferences, including voting rights, designated from time to time by our board of directors. The existence of authorized but unissued shares of preferred stock enables our board of directors to make it more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise.
- *Classified board.* Our amended and restated certificate of incorporation provides for a classified board of directors consisting of three classes of directors, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. This provision may have the effect of delaying a change in control of our board.
- *Board of directors vacancies.* Our amended and restated certificate of incorporation and amended and restated bylaws authorize only our board of directors to fill vacant directorships. In addition, the number of directors constituting our board of directors may be set only by resolution adopted by a majority vote of our entire board of directors. These provisions prevent a stockholder from increasing the size of our board of directors and gaining control of our board of directors by filling the resulting vacancies with its own nominees.
- *Stockholder action; special meetings of stockholders.* Our amended and restated certificate of incorporation provides that our stockholders may not take action by written consent, but may only take action at annual or special meetings of our stockholders. Stockholders will not be permitted to cumulate their votes for the election of directors. Our amended and restated certificate of incorporation further provides that only the chairman of our board of directors or a majority of our board of directors may call special meetings of our stockholders.
- *Advance notice requirements for stockholder proposals and director nominations.* Our amended and restated bylaws provide advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders, or to nominate candidates for election as directors at our annual meeting of stockholders. Our amended and restated bylaws also specify certain requirements as to the form and content of a stockholder's notice. These provisions may make it more difficult for our stockholders to bring matters before our annual meeting of stockholders or to nominate directors at annual meetings of stockholders.

We designed these provisions to enhance the likelihood of continued stability in the composition of our board of directors and its policies, to discourage certain types of transactions that may involve an actual or threatened acquisition of us, and to reduce our vulnerability to an unsolicited acquisition proposal. We also designed these provisions to discourage certain tactics that may be used in proxy fights. However, these provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they may also reduce fluctuations in the market price of our shares that could result from actual or rumored takeover attempts.

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the DGCL, which prohibits a Delaware corporation from engaging in a business combination with any interested stockholder for a period of three years following the date the person became an interested stockholder, with the following exceptions:

- before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested holder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (a) by persons who are directors and also officers and (b) pursuant to employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; and
- on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 ⅔% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 of the DGCL defines business combination to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 of the DGCL defines an “interested stockholder” as an entity or person who, together with the entity’s or person’s affiliates and associates, beneficially owns, or is an affiliate of the corporation and within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

A Delaware corporation may “opt out” of these provisions with an express provision in its certificate of incorporation. We have not opted out of these provisions, which may as a result, discourage or prevent mergers or other takeover or change in control attempts of us.

Choice of Forum

Our amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware will be the exclusive forum for any derivative action or proceeding brought on our behalf, any action

asserting a breach of fiduciary duty owed by any director, officer, employee or agent to us or our stockholders, any action asserting a claim against us arising pursuant to the DGCL or our certificate of incorporation or bylaws, any action to interpret, apply, enforce or determine the validity of our certificate of incorporation or bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine. However, several lawsuits involving other companies have been brought challenging the validity of choice of forum provisions in certificates of incorporation, and it is possible that a court could rule that such provision is inapplicable or unenforceable.

Transfer Agent and Registrar

Our transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

NASDAQ Global Market

We have applied to list our common stock on The NASDAQ Global Market under the trading symbol “VCNX.”

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, no public market for our common stock existed, and a liquid trading market for our common stock may not develop or be sustained after this offering. Future sales of substantial amounts of our common stock in the public market, including shares issued upon exercise of outstanding stock options, or the anticipation of such sales, could adversely affect prevailing market prices of our common stock from time to time and could impair our ability to raise equity capital in the future. Furthermore, because only a limited number of shares of our common stock will be available for sale shortly after this offering due to certain contractual and legal restrictions on resale described below, sales of substantial amounts of our common stock in the public market after such restrictions lapse, or the anticipation of such sales, could adversely affect the prevailing market price of our common stock and our ability to raise equity capital in the future.

Based on the number of shares of common stock outstanding as of December 31, 2017, upon completion of this offering, shares of our common stock will be outstanding. The number of shares outstanding upon completion of this offering assumes no exercise of outstanding stock options and no exercise of the underwriters' over-allotment option.

All of the shares sold in this offering will be freely tradable unless purchased by our affiliates. The remaining shares of common stock outstanding after this offering will be restricted as a result of securities laws or lock-up agreements as described below. Following the expiration of the lock-up period, all shares will be eligible for resale, subject to compliance with Rule 144 or Rule 701 of the Securities Act to the extent these shares have been released from any repurchase option that we may hold.

We may issue shares of common stock from time to time as consideration for future acquisitions, investments or other corporate purposes. In the event that any such acquisition, investment or other transaction is significant, the number of shares of common stock that we may issue may in turn be significant. We may also grant registration rights covering those shares of common stock issued in connection with any such acquisition and investment.

In addition, shares of common stock that are either subject to outstanding stock options or reserved for future issuance under our equity incentive plans will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements and Rule 144 and Rule 701 of the Securities Act.

Rule 144

In general, under Rule 144 of the Securities Act, as in effect on the date of this prospectus, beginning 90 days after the date of this prospectus, any person who is not our affiliate at any time during the preceding three months, and who has beneficially owned their shares for at least six months, including the holding period of any prior owner other than one of our affiliates, would be entitled to sell an unlimited number of shares of our common stock provided current public information about us is available, and, after owning such shares for at least one year, including the holding period of any prior owner other than one of our affiliates, would be entitled to sell an unlimited number of shares of our common stock without restriction.

Beginning 90 days after the date of this prospectus, a person who is our affiliate or who was our affiliate at any time during the preceding three months, and who has beneficially owned restricted securities for at least six months, including the holding period of any prior owner other than one of our affiliates, is entitled to sell within any three-month period a number of shares that does not exceed the greater of:

- 1% of the number of shares of our common stock then outstanding, which will equal approximately shares, or shares if the underwriters exercise their over-allotment option in full, immediately following this offering, based on the number of shares of our common stock outstanding upon completion of this offering; or

- the average weekly trading volume of our common stock on NASDAQ during the four calendar weeks preceding the filing of a Notice of Proposed Sale of Securities pursuant to Rule 144 with respect to the sale.

Sales under Rule 144 by our affiliates are also subject to manner of sale provisions and notice requirements and to the availability of current public information about us.

Upon expiration of the 180-day lock-up period described below, shares of our common stock will be eligible for sale under Rule 144. We cannot estimate the number of shares of our common stock that our existing stockholders will elect to sell under Rule 144.

Rule 701

In general, under Rule 701 of the Securities Act, any of an issuer's employees, directors, officers, consultants or advisors who purchases shares from the issuer in connection with a compensatory stock or stock option plan or other written agreement before the effective date of a registration statement under the Securities Act, is entitled to sell such shares 90 days after such effective date in reliance on Rule 144. An affiliate of the issuer can resell shares in reliance on Rule 144 without having to comply with the holding period requirement, and non-affiliates of the issuer can resell shares in reliance on Rule 144 without having to comply with the current public information and holding period requirements.

Lock-up Agreements

We, along with our directors and executive officers and substantially all of our other stockholders have agreed with the underwriters that, for a period of 180 days following the date of this prospectus, we or they will not offer, sell, contract to sell, pledge, grant any stock option to purchase, make any short sale or otherwise dispose of any shares of our common stock (including any shares issued in this offering or other issuer-directed shares), or any stock options or warrants to purchase any shares of our common stock, or any securities convertible into, exchangeable for or that represent the right to receive shares of our common stock, whether now owned or later acquired, owned directly or with respect to which we or they have beneficial ownership within the rules and regulations of the SEC, subject to specified exceptions. The underwriters may, in their sole discretion, at any time without prior notice, release all or any portion of the shares from the restrictions in any such agreement.

Equity Incentive Plans

We intend to file one or more registration statements on Form S-8 under the Securities Act to register all shares of common stock subject to outstanding stock options and common stock issuable under our equity incentive plans. We expect to file the registration statement covering such shares shortly after the date of this prospectus, permitting the resale of such shares by non-affiliates in the public market without restriction under the Securities Act and the sale by affiliates in the public market, subject to compliance with the resale provisions of Rule 144. For more information on our equity incentive plans, see "Executive and Director Compensation–Equity Benefit Plans."

Registration Rights

Following the completion of this offering, the holders of shares of our common stock outstanding at , 2018, including shares issuable upon conversion of our preferred stock and upon the conversion of the June 2016 Note (including accrued interest), are entitled to certain registration rights. For more information, see "Description of Capital Stock–Registration Rights." Except for shares purchased by affiliates, registration of their shares under the Securities Act would result in these shares becoming freely tradable without restriction under the Securities Act immediately upon the effectiveness of such registration statement, subject to the expiration of the lock-up period and to the extent these shares have been released from any repurchase option that we may hold.

MATERIAL U.S. FEDERAL INCOME AND ESTATE TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following summary describes the material U.S. federal income and estate tax consequences of the acquisition, ownership, and disposition of our common stock acquired in this offering by Non-U.S. Holders, as defined below. This discussion does not address all aspects of U.S. federal income and estate taxes and does not discuss foreign, state, and local consequences that may be relevant to Non-U.S. Holders in light of their particular circumstances. Moreover, the effects of other U.S. federal tax laws (such as estate and gift tax laws) and the potential application of the Medicare contribution tax are not discussed. Special rules different from those described below may apply to certain Non-U.S. Holders that are subject to special treatment under the Code, such as financial institutions, insurance companies, tax-exempt organizations, broker-dealers and traders in securities, U.S. expatriates, "controlled foreign corporations," "passive foreign investment companies," corporations that accumulate earnings to avoid U.S. federal income tax, persons that hold our common stock as part of a "straddle," "hedge," "conversion transaction," "synthetic security" or integrated investment or other risk reduction strategy, partnerships and other pass-through entities, and investors in such pass-through entities. Such Non-U.S. Holders are urged to consult their own tax advisors to determine the U.S. federal, state, local, and other tax consequences that may be relevant to them. Further, the discussion below is based upon the provisions of the Code, and Treasury regulations, rulings, and judicial decisions thereunder as of the date hereof, and such authorities may be repealed, revoked, or modified, possibly retroactively, so as to result in U.S. federal income and estate tax consequences different from those discussed below. We have not requested a ruling from the IRS with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions. This discussion assumes that the Non-U.S. Holder holds our common stock as a "capital asset" within the meaning of Section 1221 of the Code, which, generally, is property held for investment.

If a partnership or other entity taxable as a partnership holds our common stock, the tax treatment of the partners in the partnership generally will depend on the status of the particular partner in question and the activities of the partnership. Such partners should consult their tax advisors as to the specific tax consequences to them of holding our common stock indirectly through ownership of their partnership interests, particularly in light of recent U.S. tax reform.

The following discussion is for general information only and is not tax advice. Persons considering the purchase of our common stock pursuant to this offering should consult their own tax advisors concerning the U.S. federal income and estate tax consequences of acquiring, owning, and disposing of our common stock in light of their particular situations as well as any consequences arising under the laws of any other taxing jurisdiction, including any state, local, or foreign tax consequences.

For the purposes of this discussion, a "Non-U.S. Holder" is, for U.S. federal income tax purposes, a beneficial owner of common stock that is neither a U.S. Holder, a partnership (or other entity treated as a partnership for U.S. federal income tax purposes regardless of its place of organization or formation), nor an entity that is treated as a disregarded entity for U.S. federal income tax purposes (regardless of its place of organization or formation). A "U.S. Holder" means a beneficial owner of our common stock that is for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation or other entity treated as a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or

a trust if it (a) is subject to the primary supervision of a court within the United States and one or more U.S. persons have the authority to control all substantial decisions of the trust or (b) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

Distributions

Subject to the discussion below, distributions, if any, made on our common stock to a Non-U.S. Holder of our common stock to the extent made out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles) generally will constitute dividends for U.S. tax purposes and will be subject to withholding tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. To obtain a reduced rate of withholding under a treaty, a Non-U.S. Holder generally will be required to provide us with a properly executed IRS Form W-8BEN, or other appropriate form, certifying the Non-U.S. Holder's entitlement to benefits under that treaty. In the case of a Non-U.S. Holder that is an entity, Treasury regulations and the relevant tax treaty provide rules to determine whether, for purposes of determining the applicability of a tax treaty, dividends will be treated as paid to the entity or to those holding an interest in that entity. If a Non-U.S. Holder holds stock through a financial institution or other agent acting on the holder's behalf, the Non-U.S. Holder will be required to provide appropriate documentation to such agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. If a Non-U.S. Holder is eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty, the Non-U.S. Holder should contact its tax advisor regarding the possibility of obtaining a refund or credit of any excess amounts withheld by timely filing an appropriate claim for a refund with the IRS.

We generally are not required to withhold tax on dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, are attributable to a permanent establishment that such Non-U.S. Holder maintains in the United States) if a properly executed IRS Form W-8ECI, stating that the dividends are so connected, is furnished to us (or, if stock is held through a financial institution or other agent, to such agent). In general, such effectively connected dividends will be subject to U.S. federal income tax, on a net income basis at the regular graduated rates, unless a specific treaty exemption applies. A corporate Non-U.S. Holder receiving effectively connected dividends may also be subject to an additional "branch profits tax," which is imposed, under certain circumstances, at a rate of 30% (or such lower rate as may be specified by an applicable treaty) on the corporate Non-U.S. Holder's effectively connected earnings and profits, subject to certain adjustments.

To the extent distributions on our common stock, if any, exceed our current and accumulated earnings and profits, they will constitute a non-taxable return of capital and will first reduce the Non-U.S. Holder's adjusted basis in our common stock, but not below zero, and then will be treated as gain and taxed in the same manner as gain realized from a sale or other disposition of common stock as described in the next section.

Gain on Disposition of Our Common Stock

Subject to the discussion below, a Non-U.S. Holder generally will not be subject to U.S. federal income tax with respect to gain realized on a sale or other disposition of our common stock unless:

(a) the gain is effectively connected with a trade or business of such holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment that such holder maintains in the United States);

(b) the Non-U.S. Holder is a nonresident alien individual and is present in the United States for 183 or more days in the taxable year of the disposition and certain other conditions are met; or

(c) we are or have been a "United States real property holding corporation" within the meaning of Code section 897(c)(2) at any time within the shorter of the five-year period preceding such disposition or such holder's holding period.

In general, we would be a U.S. real property holding corporation if interests in U.S. real estate constituted (by fair market value) at least half of our business assets. We believe that we are not, and we do not anticipate

becoming, a U.S. real property holding corporation. Even if we are treated as a U.S. real property holding corporation, gain realized by a Non-U.S. Holder on a disposition of our common stock will not be subject to U.S. federal income tax so long as (1) the Non-U.S. Holder owned, directly, indirectly and constructively, no more than 5% of our common stock at all times within the shorter of (A) the five-year period preceding the disposition or (B) the holder's holding period and (2) our common stock is regularly traded on an established securities market. There can be no assurance that our common stock will qualify as regularly traded on an established securities market.

If you are a Non-U.S. Holder described in (a) of the preceding paragraph, you will be required to pay tax on the net gain derived from the sale at regular graduated U.S. federal income tax rates, unless a specific treaty exemption applies, and corporate Non-U.S. Holders described in (a) of the preceding paragraph may be subject to the additional branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. If you are an individual Non-U.S. Holder described in (b) of the preceding paragraph, you will be required to pay a flat 30% tax on the gain derived from the sale, which gain may be offset by U.S. source capital losses, even though you are not considered a resident of the United States.

Information Reporting Requirements and Backup Withholding

Generally, we must report information to the IRS with respect to any dividends we pay on our common stock, including the amount of any such dividends, the name and address of the recipient, and the amount, if any, of tax withheld. A similar report is sent to the holder to whom any such dividends are paid. Pursuant to tax treaties or certain other agreements, the IRS may make its reports available to tax authorities in the recipient's country of residence.

Dividends paid by us (or our paying agents) to a Non-U.S. Holder also may be subject to U.S. backup withholding. U.S. backup withholding generally will not apply to a Non-U.S. Holder who provides a properly executed IRS Form W-8BEN or otherwise establishes an exemption. The current backup withholding rate is 24%.

Under current U.S. federal income tax law, U.S. information reporting and backup withholding requirements generally will apply to the proceeds of a disposition of our common stock effected by or through a U.S. office of any broker, U.S. or foreign, except that information reporting and such requirements may be avoided if the holder provides a properly executed IRS Form W-8BEN or otherwise meets documentary evidence requirements for establishing Non-U.S. Holder status or otherwise establishes an exemption. Generally, U.S. information reporting and backup withholding requirements will not apply to a payment of disposition proceeds to a Non-U.S. Holder where the transaction is effected outside the United States through a non-U.S. office of a non-U.S. broker. Information reporting and backup withholding requirements, however, may apply to a payment of disposition proceeds if the broker has actual knowledge, or reason to know, that the holder is, in fact, a U.S. person. For information reporting purposes, certain brokers with substantial U.S. ownership or operations generally will be treated in a manner similar to U.S. brokers.

Backup withholding is not an additional tax. A holder subject to backup withholding should contact the holder's tax advisor regarding the possibility of obtaining a refund or a tax credit and any associated requirements to provide information to the IRS or other relevant tax authority.

Payments to Certain Foreign Entities

The Foreign Account Tax Compliance Act, or FATCA, generally imposes a U.S. federal withholding tax of 30% on dividends and the gross proceeds of a disposition of our common stock paid to a "foreign financial institution" (as specifically defined for this purpose), unless such institution enters into an agreement with the U.S. government to, among other things, withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding U.S. account holders of such institution (which includes certain

equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or otherwise qualifies for an exemption from these rules. A U.S. federal withholding tax of 30% also applies to dividends and will apply to the gross proceeds of a disposition of our common stock paid to a non-financial foreign entity (as defined in the Code), unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect U.S. owners or provides information regarding substantial direct and indirect U.S. owners of the entity, or otherwise qualifies for an exemption from these rules. The withholding provisions described above currently apply to dividends paid on our common stock and will generally apply with respect to gross proceeds of a sale or other disposition of our common stock on or after January 1, 2019.

If withholding is imposed under FATCA on a payment related to our common stock, a beneficial owner that is not a foreign financial institution and that otherwise would not be subject to withholding (or that otherwise would be entitled to a reduced rate of withholding) generally may obtain a refund from the IRS by filing a U.S. federal income tax return (which may entail significant administrative burden). An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph.

Each prospective investor should consult its tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, owning and disposing of our common stock, including the consequences of any proposed change in applicable laws.

UNDERWRITING

We have entered into an underwriting agreement with the several underwriters listed in the table below. is acting as the book-running manager of the offering and the representative of the underwriters. We refer to the several underwriters listed in the table below as the "underwriters."

Subject to the terms and conditions set forth in the underwriting agreement, we have agreed to sell to each underwriter named below, and each underwriter named below has agreed, severally and not jointly, to purchase from us, at the initial public offering price per share set forth on the cover page of this prospectus, less the underwriting discounts and commissions, the number of shares of common stock listed next to its name in the following table:

Underwriters	Number of shares
Total	

The underwriters are committed to purchase all of the shares of common stock offered by us other than those covered by the option to purchase additional shares described below, if they purchase any shares. The obligations of the underwriters may be terminated upon the occurrence of certain events specified in the underwriting agreement. Furthermore, pursuant to the underwriting agreement, the underwriters' obligations are subject to customary conditions, representations and warranties contained in the underwriting agreement, such as receipt by the underwriters of officers' certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Over-Allotment Option

We have granted the underwriters an option to purchase up to an additional shares of common stock from us at the initial public offering price, less the underwriting discounts and commissions, to cover over-allotments, if any. The underwriters may exercise this option at any time, in whole or in part, during the 30-day period after the date of this prospectus. If the underwriters exercise this option, each underwriter will be obligated, subject to conditions contained in the underwriting agreement, to purchase a number of additional shares proportionate to that underwriter's initial amount reflected in the above table.

Discounts, Commissions and Expenses

The underwriters propose to offer the shares of common stock purchased pursuant to the underwriting agreement to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers at that price less a concession not in excess of $ per share. After this offering, the public offering price and concession may be changed by the underwriters. No such change shall change the amount of proceeds to be received by us as set forth on the cover page of this prospectus.

In connection with the sale of the common stock to be purchased by the underwriters, the underwriters will be deemed to have received compensation in the form of underwriting commissions and discounts. The underwriters' commissions and discounts will be % of the gross proceeds of this offering, or $ per share of common stock, based on the initial public offering price per share set forth on the cover page of this prospectus.

The following table shows the underwriting discounts and commissions payable to the underwriters by us in connection with this offering (assuming both the exercise and non-exercise of the over-allotment option to purchase additional shares of common stock we have granted to the underwriters):

	Per Share		Total	
	Without Over-allotment	With Over-allotment	Without Over-allotment	With Over-allotment
Public offering price	$			
Underwriting discounts and commissions paid by us	$		$	

We have also agreed to reimburse at closing for legal expenses incurred by it in connection with the offering up to a maximum of $.

We estimate that the total expenses of the offering payable by us, excluding underwriting discounts and commissions, will be approximately $.

Indemnification

Pursuant to the underwriting agreement, we have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments that the underwriters or such other indemnified parties may be required to make in respect of those liabilities.

Lock-Up Agreements

We, all of our directors and executive officers, and substantially all of the holders of our outstanding securities have agreed that, for a period of 180 days after the date of this prospectus, subject to certain limited exceptions, we and they will not directly or indirectly, without the prior written consent of the representatives of the underwriters, (1) offer for sale, sell, pledge, or otherwise dispose of (or enter into any transaction or device that is designed to, or could be expected to, result in the disposition by any person at any time in the future of) any shares of common stock (including, without limitation, shares of common stock that may be deemed to be beneficially owned by us or them in accordance with the rules and regulations of the SEC and shares of common stock that may be issued upon exercise of any stock options or warrants) or securities convertible into or exercisable or exchangeable for common stock, (2) enter into any swap or other derivatives transaction that transfers to another, in whole or in part, any of the economic benefits or risks of ownership of shares of common stock, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or other securities, in cash or otherwise, (3) make any demand for or exercise any right or cause to be filed a registration statement, including any amendments thereto, with respect to the registration of any shares of common stock or securities convertible into or exercisable or exchangeable for common stock or any of our other securities, or (4) publicly disclose the intention to do any of the foregoing.

The representative of the underwriters may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time. When determining whether or not to release common stock and other securities from lock-up agreements, the representative of the underwriters will consider, among other factors, the holder’s reasons for requesting the release, the number of shares of common stock and other securities for which the release is being requested and market conditions at the time.

At least three business days before the effectiveness of any release or waiver of any of the restrictions described above with respect to an officer or director of the company, the representative of the underwriters will notify us of the impending release or waiver and we have agreed to announce the impending release or waiver by press release through a major news service at least two business days before the effective date of the release or waiver.

Electronic Distribution

A prospectus in electronic format may be made available on the websites maintained by one or more of the underwriters or selling group members, if any, participating in this offering and one or more of the underwriters participating in this offering may distribute prospectuses electronically. The underwriters may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriters and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of, nor incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

Determination of the Initial Public Offering Price

Prior to this offering, there has been no public market for our common stock. The initial public offering price was determined through negotiations between us and the representative of the underwriters. In addition to prevailing market conditions, the factors considered in determining the initial public offering price included the following:

- the information included in this prospectus and otherwise available to the underwriters;
- the valuation multiples of publicly traded companies that the underwriters believe to be comparable to us;
- our financial information;
- our prospects and the history and the prospects of the industry in which we compete;
- an assessment of our management, its past and present operations, and the prospects for, and timing of, our future revenues;
- the present state of our development; and
- the above factors in relation to market values and various valuation measures of other companies engaged in activities similar to ours.

We offer no assurances that the initial public offering price will correspond to the price at which the common stock will trade in the public market subsequent to the offering or that an active trading market for the common stock will develop and continue after the offering.

Price Stabilization, Short Positions and Penalty Bids

In connection with the offering the underwriters may engage in stabilizing transactions, over-allotment transactions, syndicate covering transactions and penalty bids in accordance with Regulation M under the Exchange Act:

- Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum.
- Over-allotment involves sales by the underwriters of shares in excess of the number of shares the underwriters are obligated to purchase, which creates a syndicate short position. The short position may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriters is not greater than the number of shares that they may purchase in the over-allotment option. In a naked short position, the number of shares involved is greater than the number of shares in the over-allotment option. The underwriters may close out any covered short position by either exercising their over-allotment option and/or purchasing shares in the open market.
- Syndicate covering transactions involve purchases of the common stock in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option. A naked short position occurs if the underwriters sell more shares than could be covered by the over-allotment option. This position can only be closed out by buying shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there could be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.
- Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the common stock originally sold by the syndicate member is purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market

price of the common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. These transactions may be discontinued at any time.

Neither we nor the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our shares of common stock. In addition, neither we nor the underwriters make any representation that the underwriter will engage in these transactions or that any transaction, if commenced, will not be discontinued without notice.

Other Relationships

Some of the underwriters and their affiliates may provide from time to time in the future, certain financial advisory, investment banking and other services to us in the ordinary course of their business, for which they may continue to receive customary fees and commissions. In addition, from time to time, the underwriters and their affiliates may effect transactions for their own account or the accounts of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future.

Selling Restrictions

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive, each, a Relevant Member State, an offer to the public of any common stock which are the subject of the offering contemplated herein may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- to legal entities which are qualified investors as defined under the Prospectus Directive;
- by the underwriters to fewer than 100, or, if the Relevant Member State has implemented the relevant provisions of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives of the underwriters for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of common stock shall result in a requirement for us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive or supplement a prospectus pursuant to Article 16 of the Prospectus Directive.

Each person in a Relevant Member State who receives any communication in respect of, or who acquires any common stock under, the offers contemplated here in this prospectus will be deemed to have represented, warranted and agreed to and with each underwriter and us that:

- it is a qualified investor as defined under the Prospectus Directive; and
- in the case of any common stock acquired by it as a financial intermediary, as that term is used in Article 3(2) of the Prospectus Directive, (i) the common stock acquired by it in the offering have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Relevant Member State other than qualified investors, as that term is defined in the Prospectus Directive, or in the circumstances in which the prior consent of the representatives of the underwriters has been given to the offer or resale or (ii) where common stock have been acquired by it on behalf of persons in any Relevant Member State other than qualified investors, the offer of such common stock to it is not treated under the Prospectus Directive as having been made to such persons.

For the purposes of this representation and the provision above, the expression an "offer of common stock to the public" in relation to any common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any common stock to be offered so as to enable an investor to decide to purchase or subscribe for the common stock, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in each Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

This prospectus has only been communicated or caused to have been communicated and will only be communicated or caused to be communicated as an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act of 2000, or FSMA) received in connection with the issue or sale of the common stock in circumstances in which Section 21(1) of the FSMA does not apply to us. All applicable provisions of the FSMA will be complied with in respect to anything done in relation to the common stock in, from or otherwise involving the United Kingdom.

Notice to Residents of Canada

The securities may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

LEGAL MATTERS

The validity of the shares of our common stock to be issued in this offering will be passed upon for us by our counsel, Hogan Lovells US LLP, Baltimore, Maryland who will also address certain other legal matters relating to this offering. Certain legal matters relating to this offering will be passed upon for the company by Harter Secrest & Emery LLP, Rochester, New York, and for the underwriters by .

EXPERTS

The consolidated financial statements included in this prospectus have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report appearing herein (which report expresses an unqualified opinion on the consolidated financial statements and includes an explanatory paragraph referring to the substantial doubt about Vaccinex, Inc.'s ability to continue as a going concern). Such consolidated financial statements are included in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of our common stock offered by this prospectus. This prospectus, which constitutes part of that registration statement, does not contain all of the information set forth in the registration statement or the accompanying exhibits and schedules. Some items included in the registration statement are omitted from this prospectus in accordance with the rules and regulations of the SEC. For further information with respect to us and the common stock offered in this prospectus, we refer you to the registration statement and the accompanying exhibits and schedules. Statements contained in this prospectus regarding the contents of any contract, agreement or any other document are summaries of the material terms of these contracts, agreements or other documents. With respect to each of these contracts, agreements or other documents filed as an exhibit to the registration statement, reference is made to such exhibit for a more complete description of the matter involved.

A copy of the registration statement and the accompanying exhibits and schedules and any other document we file may be inspected without charge and copied at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. The public may obtain information on the operation of the public reference room by calling the SEC at 1-800-SEC-0330. The SEC maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the SEC. The address of the SEC's website is www.sec.gov.

Upon completion of this offering, we will become subject to the information and periodic reporting requirements of the Exchange Act, and we will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information will be available for inspection and copying at the public reference room and website of the SEC referred to above. We maintain a website at www.vaccinex.com. You will be able to access our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material will be electronically filed with, or furnished to, the SEC. The information contained in, or that can be accessed through, our website is not part of this prospectus.

VACCINEX, INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Vaccinex, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Vaccinex, Inc. and subsidiaries (the "Company") as of December 31, 2016 and 2017, the related consolidated statements of operations, redeemable convertible preferred stock and stockholders' deficit, and cash flows for each of the two years in the period ended December 31, 2017, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2016 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the financial statements, the Company has suffered recurring losses and negative cash flows from operations that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte & Touche LLP

Rochester, New York
April 13, 2018

We have served as the Company's auditor since 2014.

VACCINEX, INC.

Consolidated Balance Sheets
(in thousands, except share and per share data)

	As of December 31,		Pro Forma Stockholders' Equity as of December 31, 2017 (unaudited)
	2016	2017	
ASSETS			
Current assets:			
Cash and cash equivalents	$ 1,661	$ 4,180	
Accounts receivable, net	104	117	
Prepaid expenses and other current assets	347	677	
Total current assets	2,112	4,974	
Property and equipment, net	730	601	
TOTAL ASSETS	$ 2,842	$ 5,575	
LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT			
Current liabilities:			
Accounts payable	$ 2,456	$ 1,910	$
Accrued expenses	1,984	1,957	
Deferred revenue	–	298	
Total current liabilities	4,440	4,165	
Convertible promissory notes to related party, net	1,037	2,813	
Derivative liabilities	694	369	–
TOTAL LIABILITIES	6,171	7,347	
Commitments and contingencies (Note 7)			
Redeemable convertible preferred stock (Series B, B-1, B-2, C, D), par value of $0.001 per share; 56,317,000 and 66,317,000 shares authorized as of December 31, 2016 and 2017; 48,694,355 and 53,089,959 shares issued and 48,694,192 and 53,089,796 shares outstanding as of December 31, 2016 and 2017 with aggregate liquidation preference of $129,050 and $140,261 as of December 31, 2016 and 2017, actual; no shares issued and outstanding as of December 31, 2017, pro forma (unaudited)	103,736	111,718	–
Stockholders' deficit:			
Convertible preferred stock (Series A), par value of $0.001 per share; 5,702,450 shares authorized, issued and outstanding as of December 31, 2016 and 2017 with aggregate liquidation preference of $7,684 as of December 31, 2016 and 2017, actual; no shares issued and outstanding as of December 31, 2017, pro forma (unaudited)	7,684	7,684	–
Common stock, par value of $0.0001 per share; 150,000,000 and 160,000,000 shares authorized as of December 31, 2016 and 2017; 11,013,705 and 11,034,077 shares issued as of December 31, 2016 and 2017; 11,005,345 and 11,025,717 shares outstanding as of December 31, 2016 and 2017, actual; shares issued and shares outstanding as of December 31, 2017, pro forma (unaudited)	1	1	
Additional paid-in capital	53,788	54,122	
Treasury stock, at cost; 163 shares of redeemable convertible preferred stock, and 8,360 shares of common stock as of December 31, 2016 and 2017, actual and pro forma (unaudited)	(11)	(11)	
Accumulated deficit	(168,527)	(187,249)	
Total Vaccinex, Inc. stockholders' deficit	(107,065)	(125,453)	
Noncontrolling interests	–	11,963	
TOTAL STOCKHOLDERS' DEFICIT	(107,065)	(113,490)	$
TOTAL LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT	$ 2,842	$ 5,575	

The accompanying notes are an integral part of these consolidated financial statements.

VACCINEX, INC.

Consolidated Statements of Operations
(in thousands, except share and per share data)

	Year Ended December 31,	
	2016	2017
Revenue	$ 316	$ 90
Costs and expenses:		
Cost of revenue	115	160
Research and development	16,028	16,551
General and administrative	4,432	4,483
Total costs and expenses	20,575	21,194
Loss from operations	(20,259)	(21,104)
Change in fair value of derivative liabilities	9,310	3,743
Interest expense	(2,990)	(1,358)
Other expense, net	(4)	(40)
Loss before provision for income taxes	(13,943)	(18,759)
Provision for income taxes	–	–
Net loss	(13,943)	(18,759)
Net loss attributable to noncontrolling interests	–	37
Net loss attributable to Vaccinex, Inc.	$ (13,943)	$ (18,722)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)
Deemed dividend from Series C redeemable convertible preferred stock modification	(9,079)	–
Net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (26,233)	$ (21,933)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (2.53)	$ (1.99)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	10,381,417	11,019,375
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)		$
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)		

The accompanying notes are an integral part of these consolidated financial statements.

VACCINEX, INC.

Consolidated Statements of Redeemable Convertible Preferred Stock and Stockholders' Deficit
(in thousands, except share data)

	Redeemable Convertible Preferred Stock		Convertible Preferred Stock		Common Stock			Treasury Stock						
	Shares	Amount	Shares	Amount	Shares	Amount	Additional Paid-in Capital	Redeemable Convertible Preferred Stock Shares	Common Stock Shares	Amount	Accumulated Deficit	Total Vaccinex, Inc. Stockholders' Deficit	Noncontrolling Interests	Total Stockholders' Deficit
Balance as of January 1, 2016	25,302,317	$ 60,730	5,702,450	$ 7,684	10,388,068	$ 1	$ 51,526	(163)	(8,360)	$ (11)	$ (145,505)	$ (86,305)	$ –	$ (86,305)
Stock-based compensation	–	–	–	–	–	–	135	–	–	–	–	135	–	135
Conversion of February 2016 Note to common stock	–	–	–	–	625,637	–	2,127	–	–	–	–	2,127	–	2,127
Issuance of Series D redeemable convertible preferred stock, net of issuance cost of $71	5,906,593	10,679	–	–	–	–	–	–	–	–	–	–	–	–
Conversion of convertible promissory notes to Series D redeemable convertible preferred stock	17,485,445	23,248	–	–	–	–	–	–	–	–	–	–	–	–
Deemed dividend from Series C redeemable convertible preferred stock modification	–	9,079	–	–	–	–	–	–	–	–	(9,079)	(9,079)	–	(9,079)
Net loss	–	–	–	–	–	–	–	–	–	–	(13,943)	(13,943)	–	(13,943)
Balance as of December 31, 2016	48,694,355	103,736	5,702,450	7,684	11,013,705	1	53,788	(163)	(8,360)	(11)	(168,527)	(107,065)	–	(107,065)
Capital contribution	–	–	–	–	–	–	–	–	–	–	–	–	12,000	12,000
Stock-based compensation	–	–	–	–	–	–	319	–	–	–	–	319	–	319
Issuance of Series D redeemable convertible preferred stock, net of issuance cost of $18	4,395,604	7,982	–	–	–	–	–	–	–	–	–	–	–	–
Exercise of stock options	–	–	–	–	20,372	–	15	–	–	–	–	15	–	15
Net loss	–	–	–	–	–	–	–	–	–	–	(18,722)	(18,722)	(37)	(18,759)
Balance as of December 31, 2017	53,089,959	$ 111,718	5,702,450	$ 7,684	11,034,077	$ 1	$ 54,122	(163)	(8,360)	$ (11)	$ (187,249)	$ (125,453)	$ 11,963	$ (113,490)

The accompanying notes are an integral part of these consolidated financial statements.

VACCINEX, INC.

Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31,	
	2016	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (13,943)	$ (18,759)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	178	206
Amortization of debt discount	1,566	1,217
Stock-based compensation	135	319
Change in fair value of derivative liabilities	(9,310)	(3,743)
Changes in operating assets and liabilities:		
Accounts receivable	(85)	(13)
Prepaid expenses and other current assets	276	(330)
Accounts payable	407	(555)
Accrued expenses	1,056	(27)
Deferred revenue	–	298
Net cash used in operating activities	(19,720)	(21,387)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of property and equipment	(793)	(68)
Net cash used in investing activities	(793)	(68)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from issuance of convertible promissory notes to related parties, net of issuance cost	4,500	9,977
Proceeds from issuance of convertible promissory notes	1,978	–
Proceeds from issuance of Series D redeemable convertible preferred stock, net of issuance costs	10,679	7,982
Proceeds from exercise of stock options	–	15
Repayment of convertible promissory note, related party	(800)	(6,000)
Proceeds from capital contribution	–	12,000
Net cash provided by financing activities	16,357	23,974
NET (DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS	(4,156)	2,519
CASH AND CASH EQUIVALENTS–Beginning of period	5,817	1,661
CASH AND CASH EQUIVALENTS–End of period	$ 1,661	$ 4,180
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:		
Cash paid for interest	$ 7	$ 13
SUPPLEMENTAL DISCLOSURES OF NONCASH INVESTING AND FINANCING ACTIVITIES:		
Purchase of property and equipment included in accounts payable	$ –	$ 9
Deemed dividend from Series C redeemable convertible preferred stock modification	$ 9,079	$ –
Conversion of convertible promissory notes into Series D redeemable convertible preferred stock (net, related and non-related parties)	$ 16,099	$ –
Conversion of accrued interest on convertible promissory notes into Series D redeemable convertible preferred stock	$ 2,375	$ –
Conversion of embedded derivative liability into Series D redeemable convertible preferred stock upon conversion of the convertible promissory notes	$ 4,774	$ –
Conversion of February 2016 Note and accrued interest into common stock	$ 2,127	$ –

The accompanying notes are an integral part of these consolidated financial statements.

VACCINEX, INC.

Notes to Consolidated Financial Statements

1. COMPANY AND NATURE OF BUSINESS

Vaccinex, Inc. and subsidiaries (the Company) was incorporated in Delaware in April 2001 and is headquartered in Rochester, New York. The Company is a clinical-stage biotechnology company engaged in the discovery and development of targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, including cancer, neurodegenerative diseases, and autoimmune disorders. Since inception, the Company has devoted substantially all of its efforts toward product research and development, marketing development and raising capital.

The Company is subject to a number of risks common to other biotechnology companies in the early stage including, but not limited to, the successful development and commercialization of its product candidates, rapid technological change and competition, dependence on key personnel and collaborative partners, uncertainty of protection of proprietary technology and patents, clinical trial uncertainty, fluctuation in operating results and financial performance, the need to obtain additional funding, potential product liability, compliance with governmental regulations, technological and medical risks, customer demand, management of growth and effectiveness of marketing by the Company. If the Company does not successfully commercialize or partner any of its product candidates, it will be unable to generate product revenue or achieve profitability.

These consolidated financial statements have been prepared on a going concern basis, which implies the Company will continue to realize its assets and discharge its liabilities in the normal course of business. The Company has incurred significant losses and negative cash flows from operations since inception and expects to incur additional losses until such time that it can generate significant revenue from the commercialization of its product candidates. The Company had negative cash flow from operations of $19.7 million and $21.4 million for the years ended December 31, 2016 and 2017, respectively, an accumulated deficit of $168.5 million and $187.2 million, respectively, and stockholders' deficit of $107.1 million and $113.5 million, respectively, as of December 31, 2016 and 2017. The Company's ability to continue as a going concern is an issue due to its historical net losses and negative cash flows from operations, and its need for additional financing to fund future operations. These conditions raise substantial doubt about the Company's ability to continue as a going concern. The consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of this uncertainty.

To date, the Company has relied on private equity and debt financing to fund its operations. The Company's primary source of liquidity has been proceeds from sales of its preferred stock and issuance of convertible promissory notes. During the years ended December 31, 2016 and 2017, the Company cumulatively raised $35.1 million through the issuance of convertible promissory notes and Series D redeemable convertible preferred stock to various related and unrelated parties. In addition, the Company also received $12.0 million capital contribution from noncontrolling interests during the year ended December 31, 2017. As the Company's product candidates are still in their early stages of development, substantial additional financing will be needed by the Company to fund its operations and ongoing research and development efforts prior to the commercialization, if any, of its product candidates. Based on the Company's current level of expenditures, management believes that cash on hand plus committed funding from existing investors is adequate to fund operations at least into the third quarter of 2018. As discussed in Note 15, in 2018 the Company received a commitment of $8.0 million of additional funding to the VX3 partnership, which we received in the first quarter of 2018. Management is currently evaluating different strategies to obtain the required funding of future operations. These strategies may include, but are not limited to, additional funding from current or new investors, refinancing of existing debt obligations or obtaining additional debt financing, or an initial public offering (IPO) of the Company's common stock. There can be no assurances that the Company will be able to secure such additional financing, or if available, that it will be sufficient to meet its needs or on ideal terms.

VACCINEX, INC.

Notes to Consolidated Financial Statements

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying consolidated financial statements reflect the consolidated application of certain significant accounting policies, as described below and elsewhere in the accompanying notes to the consolidated financial statements.

Basis of Presentation and Consolidation

These consolidated financial statements reflect the accounts and operations of the Company and those of its subsidiaries in which the Company has a controlling financial interest. As of December 31, 2016, the Company's accounts include Vaccinex Products, LP (Vaccinex Products), a Delaware limited partnership and an 80% majority-owned subsidiary. As of December 31, 2017, the Company's accounts include Vaccinex Products and VX3 (DE) LP, a Delaware limited partnership (VX3). VX3 was established in October 2017 by a group of Canadian investors and was determined to be a variable interest entity (VIE) in which the Company is the primary beneficiary. The Company consolidates any VIE of which it is the primary beneficiary. The Company presents its noncontrolling interests as a separate component of stockholders' deficit from Vaccinex, Inc. stockholders' deficit and net loss from noncontrolling interests as a separate component within its consolidated statements of operations. The financial position of Vaccinex Products was not material as of December 31, 2016 and 2017, and there were no gains or losses for Vaccinex Products for the years ended December 31, 2016 and 2017. During the year ended December 31, 2017, VX3 had a net loss attributable to noncontrolling interests of $37,000. Intercompany transactions and balances have been eliminated.

Use of Estimates

These consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States (GAAP). The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities as of the date of the consolidated financial statements and the reported amount of expenses during the reporting period. Such management estimates include those relating to assumptions used in the valuation of stock option awards, the valuation of derivative instruments, and valuation allowances against deferred income tax assets. Actual results could differ from those estimates.

Unaudited Pro Forma Stockholders' Equity

The Company has presented unaudited pro forma stockholders' equity as of December 31, 2017 in order to show the assumed effect on the consolidated balance sheet of the automatic conversion of (i) the outstanding preferred stock upon the consummation of a qualified IPO as defined in Note 9; and (ii) the convertible promissory notes and the related reclassification of the derivative liabilities associated with the convertible promissory notes upon the consummation of an IPO as further discussed in Note 6. Upon the consummation of an IPO, all of the outstanding Series A convertible preferred stock and Series B, B-1, B-2, C and D redeemable convertible preferred stock will automatically convert into 70,392,985 shares of common stock. The unaudited pro forma stockholders' equity does not give effect to any proceeds from the assumed IPO.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less at the date of purchase to be cash equivalents. The Company deposits its cash primarily in checking and money market accounts.

VACCINEX, INC.

Notes to Consolidated Financial Statements

Concentration of Credit Risk, Other Risks and Uncertainties

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents. Cash equivalents are deposited in interest-bearing money market accounts. Although the Company deposits the cash with multiple financial institutions, cash balances may occasionally be in excess of the amounts insured by the Federal Deposit Insurance Corporation. Management believes the financial risk associated with these balances is minimal and has not experienced any losses to date.

The Company depends on third-party manufacturers for the manufacture of drug substance and drug product for clinical trials. The Company also relies on certain third-parties for its supply chain. Disputes with these third- party manufacturers or shortages in goods or services from third-party suppliers could delay the manufacturing of the Company's product candidates and adversely impact its results of operations.

Fair Value of Financial Instruments

Financial instruments consist of cash and cash equivalents, prepaid expenses and other current assets, accounts payable, accrued expenses, convertible promissory notes, and derivative liabilities. Cash equivalents are stated at fair value. Prepaid expenses and other current assets, accounts payable and accrued expenses are stated at their carrying value, which approximates fair value due to the short time to the expected receipt or payment date. The principal amount of the Company's convertible promissory notes approximates fair value as the stated interest rate approximates market rates currently available to the Company. The derivative liabilities are stated at fair value.

Property and Equipment, Net

Property and equipment are recorded at cost. Depreciation is computed over estimated useful lives of the related assets using the straight-line method. Leasehold improvements are amortized on a straight-line basis over the shorter of the useful life or term of the lease. Upon retirement or disposal, the cost and related accumulated depreciation are removed from the consolidated balance sheets and the resulting gain or loss is recorded to general and administrative expense in the consolidated statements of operations. Routine expenditures for maintenance and repairs are expensed as incurred.

Estimated useful lives for property and equipment are as follows:

Property and Equipment	Estimated Useful Life
Research equipment	5 years
Furniture and fixtures	5 years
Computer equipment	3 years
Leasehold improvements	Lesser of estimated useful life or remaining lease term

Impairment of Long-Lived Assets

The Company reviews the recoverability of its long-lived assets when events or changes in circumstances occur that indicate that the carrying value of the asset may not be recoverable. The assessment of possible impairment is based on the ability to recover the carrying value of the assets from the expected future cash flows (undiscounted and without interest expense) of the related operations. If these cash flows are less than the carrying value of such assets, an impairment loss for the difference between the estimated fair value and carrying value is recorded. There was no impairment loss recognized during the years ended December 31, 2016 and 2017.

VACCINEX, INC.

Notes to Consolidated Financial Statements

Derivative Liabilities

The Company has outstanding derivative instruments related to certain features embedded within the Company's outstanding convertible promissory notes, and an outstanding derivative instrument related to an arrangement providing a holder of one of the Company's convertible promissory notes an option to purchase shares of equity in a future qualifying financing event. These derivatives are accounted for as derivative liabilities and remeasured to fair value as of each balance sheet date and the related remeasurement adjustments are recognized in the consolidated statements of operations. The Company records adjustments to the fair value of the derivative liabilities until the conversion or repayment of the related convertible promissory notes as discussed further in Note 6.

Treasury Stock

The Company records treasury stock activities under the cost method whereby the cost of the acquired stock is recorded as treasury stock. The Company's accounting policy upon the formal retirement of treasury stock is to deduct the par value from common stock and to reflect any excess of cost over par value as a reduction to additional paid-in capital (to the extent created by previous issuances of the shares) and then retained earnings. There was no treasury stock repurchased for the years ended December 31, 2016 and 2017.

Comprehensive Loss

The Company did not have any other comprehensive income or loss for any of the periods presented and therefore comprehensive loss did not differ from net loss.

Revenue Recognition

The Company derives revenue primarily from service fees generated from collaboration agreements. Under the collaboration agreements, the Company recognizes revenue when there is persuasive evidence of the arrangement, the fee is fixed or determinable, collection of the fee is reasonably assured and delivery has occurred. Nonrefundable upfront payments, if any, are recorded as deferred revenue upon receipt and recognized as revenue over the service period.

The Company accounts for revenue arrangements with multiple deliverables by dividing items into separate units of accounting if certain criteria are met, including: (1) whether the delivered item has stand-alone value to the customer; (2) whether the arrangement includes a general right of return relative to the delivered item; and (3) there is objective and reliable evidence of the fair value for the undelivered items. The Company allocates the consideration it receives among the separate units of accounting based on their respective fair value and applies the applicable revenue recognition criteria to each of the separate units. A deliverable that does not qualify as a separate unit of accounting within the arrangement is combined with the other applicable undelivered item within the arrangement.

The Company determines the estimated selling price for deliverables under the collaboration agreements using the following hierarchy: (1) vender-specific objective evidence (VSOE); (2) third-party evidence (TPE); or (3) best estimate of selling price if neither VSOE nor TPE is available. Determining the best estimate of selling price for a deliverable requires significant judgment of various factors including market conditions, items contemplated during agreement negotiation as well as internally developed net present value models.

VACCINEX, INC.

Notes to Consolidated Financial Statements

Research and Development Costs

Expenditures, including payroll, contractor expenses and supplies, for research and development of products are expensed as incurred. Clinical trial and other development costs incurred by third-parties are expensed as the contracted work is performed. Where contingent milestone payments are due to third-parties under research and development arrangements, the milestone payment obligations are expensed when the milestone results are probable of being achieved.

Stock-Based Compensation

The Company utilizes the Black-Scholes stock option-pricing model as the method for estimating the grant date fair value of its stock option awards. The Black-Scholes stock option-pricing model requires the use of highly subjective and complex assumptions, including the stock options' expected term and the price volatility of the underlying stock. The grant date fair value of the portion of the stock option award that is ultimately expected to vest is recognized as compensation expense over the stock option awards' requisite service periods. The Company recognizes stock-based compensation to expense using the straight-line method over the requisite service period. If there are any modifications or cancelations of stock option awards, we may be required to accelerate, increase or decrease any remaining unrecognized stock-based compensation expense.

Income Taxes

The Company uses the asset and liability method of accounting for income taxes. Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities, which relate primarily to the carrying amount of the Company's property and equipment and its net operating loss carryforward, are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities. Valuation allowances are established when necessary to reduce deferred tax assets where, based upon the available evidence, management concludes that it is more-likely-than not that the deferred tax assets will not be realized. In evaluating its ability to recover deferred tax assets, the Company considers all available positive and negative evidence, including its operating results, ongoing tax planning and forecasts of future taxable income on a jurisdiction-by-jurisdiction basis. Because of the uncertainty of the realization of the deferred tax assets, the Company has recorded a full valuation allowance against its deferred tax assets.

Reserves are provided for tax benefits for which realization is uncertain. Such benefits are only recognized when the underlying tax position is considered more likely than not to be sustained on examination by a taxing authority, assuming they possess full knowledge of the position and facts. Interest and penalties related to uncertain tax positions are recognized in the provision of income taxes; however, the Company currently has no interest or penalties related to income taxes.

Segment and Geographic Information

The Company's chief operating decision maker, its Chief Executive Officer, reviews its operating results on an aggregate basis for purposes of allocating resources and evaluating financial performance. The Company has one business activity, the discovery and development of human therapeutics monoclonal antibodies and other targeted therapeutic vaccines, and there are no segment managers who are held accountable for operations or operating results. Accordingly, the Company operates in one segment. As of December 31, 2016 and 2017, all long-lived assets are located in the United States.

VACCINEX, INC.

Notes to Consolidated Financial Statements

Net Loss Per Share Attributable to Vaccinex, Inc. Common Stockholders

The Company calculates its basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders in conformity with the two-class method required for companies with participating securities. The Company considers all series of its preferred stock to be participating securities. In the event a dividend is declared or paid on the Company's common stock, holders of preferred stock are entitled to a proportionate share of such dividend in proportion to the holders of common stock on an as-if converted basis. Under the two-class method, basic net loss per share attributable to Vaccinex, Inc. common stockholders is calculated by dividing the net loss attributable to Vaccinex, Inc. common stockholders by the weighted-average number of shares of common stock outstanding for the period. Net loss attributable to Vaccinex, Inc. common stockholders is determined by allocating undistributed earnings between common and preferred stockholders. The diluted net loss per share attributable to Vaccinex, Inc. common stockholders is computed by giving effect to all potential dilutive common stock equivalents outstanding for the period determined using the treasury stock method. The net loss attributable to Vaccinex, Inc. common stockholders was not allocated to the preferred stock under the two-class method as the preferred stock do not have a contractual obligation to share in the Company's losses. For purposes of this calculation, redeemable convertible preferred stock, convertible preferred stock, and stock options to purchase common stock are considered common stock equivalents but have been excluded from the calculation of diluted net loss per share attributable to Vaccinex, Inc. common stockholders as their effect is anti-dilutive.

Unaudited Pro Forma Net Loss Per Share Attributable to Vaccinex Inc. Common Stockholders

In contemplation of this IPO, the Company has presented the unaudited pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders for the year ended December 31, 2017, which has been computed to give effect to (i) the automatic conversion of all series of the convertible preferred stock into shares of common stock; (ii) the conversion of all outstanding convertible promissory notes and accrued interest into shares of common stock; and (iii) the related reclassification of the derivative liabilities associated with the convertible promissory notes into additional paid-in capital, as if all aforementioned conversion had occurred as of the beginning of the period presented, or date of issuance if later. The pro forma net loss per share attributable to Vaccinex, Inc. common stockholders does not include proceeds to be received from nor does it include shares expected to be sold in the assumed IPO.

Recent Accounting Pronouncements Not Yet Adopted

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standard Update (ASU) No. 2014-09, *Revenue from Contracts with Customers*, which supersedes the revenue recognition requirements in Accounting Standards Codification (ASC) No. 605, *Revenue Recognition*. ASU No. 2014-09 is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASU No. 2014-09 also requires additional disclosure about the nature, amount, timing and uncertainty of revenues and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. In August 2015, the FASB issued ASU No. 2015-14 to defer the effective date by one year with early adoption permitted as of the original effective date. In addition, the FASB issued ASU No. 2016-08, 2016-10 and 2016-12 in March 2016, April 2016 and May 2016, respectively, to help provide interpretive clarification on the new guidance in ASC No. 606. ASU No. 2016-08, 2016-10 and 2016-12 are all effective during the same period as ASU No. 2014-09. The Company plans to adopt the new revenue standards using the modified retrospective method when they become effective for the Company, which is at the earlier of losing the emerging growth company status or the Company's fiscal

year beginning January 1, 2019. The Company is in the process of evaluating the effect that the new revenue standards will have on the consolidated financial statements and related disclosures.

In February 2016, the FASB issued ASU No. 2016-02, *Leases*, which supersedes the ASC No. 840, *Leases*. ASU No. 2016-02 requires lessees to recognize all leases, with exception of short-term leases, as a lease liability on the balance sheet. Under ASU No. 2016-02, a lease is defined as a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis, and a right-of-use asset which is an asset that represents the lessee's right to use, or control the use of, a specified asset during the lease term. ASU No. 2016-02 also requires additional disclosure about the amount, timing and uncertainty of cash flow from leases. The new standard is effective for the Company at the earlier of losing the emerging growth company status or the Company's fiscal year beginning January 1, 2020, and interim periods therein. Early adoption is permitted. This new standard will require the present value of these leases to be recorded in the consolidated balance sheets as a right of use asset and lease liability. The Company will adopt the new standard with modified retrospective method for fiscal year effective January 1, 2020, and is continuing to evaluate the impact of this guidance on its consolidated financial statements and related disclosures.

Recently Adopted Accounting Pronouncements

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments*, which eliminates the diversity in practice related to the classification of certain cash receipts and payments for debt prepayment or extinguishment costs, the maturing of a zero coupon bond, the settlement of contingent liabilities arising from a business combination, proceeds from insurance settlements, distributions from certain equity method investees and beneficial interests obtained in a financial asset securitization. ASU No. 2016-15 designates the appropriate cash flow classification, including requirements to allocate certain components of these cash receipts and payments among operating, investing and financing activities. ASU No. 2016-15 should be applied using the retrospective transition method, requiring adjustment to all comparative periods presented, unless it is impracticable for some of the amendments, in which case those amendments would be made prospectively as of the earliest date practicable. The amendment in ASU No. 2016-15 is effective for the Company at the earlier of losing the emerging growth company status or the Company's fiscal year beginning January 1, 2019, and interim periods therein. The Company early adopted the new standard on January 1, 2018 with retrospective method. The adoption of ASU No. 2016-15 will not have a material impact on its consolidated financial statements and related disclosures.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation-Stock Compensation: Scope of Modification Accounting*, which provides clarified guidance on applying modification accounting to changes in the terms or conditions of a share-based payment award. Changes that do not impact the award's fair value, vesting conditions, or classification as an equity or liability instrument will not be subject to modification accounting. ASU No. 2017-09 is effective prospectively for the Company at the earlier of losing the emerging growth company status or the Company's fiscal year beginning January 1, 2019, and interim periods therein. The Company early adopted the new standard on January 1, 2018 with prospective method, and does not believe the adoption of ASU No. 2017-09 will have a material impact on its consolidated financial statements and related disclosures.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation–Stock Compensation: Improvements to Employee Share-Based Payment Accounting*, which simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, application of award forfeitures to expense, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The new standard is effective for the Company's fiscal year effective January 1, 2018. On January 1, 2017, the Company adopted the standard early and there was no material impact on its consolidated financial statements.

VACCINEX, INC.

Notes to Consolidated Financial Statements

3. BALANCE SHEET COMPONENTS

Property and Equipment

Property and equipment consist of the following (in thousands):

	December 31, 2016	December 31, 2017
Leasehold improvements	$ 3,129	$ 3,140
Research equipment	2,989	2,998
Furniture and fixtures	350	350
Computer equipment	157	214
Property and equipment, gross	6,625	6,702
Less: accumulated depreciation and amortization	(5,895)	(6,101)
Property and equipment, net	$ 730	$ 601

Depreciation and amortization expense related to property and equipment was $178,000 and $206,000 for the years ended December 31, 2016 and 2017.

Accrued Expenses

Accrued expenses consist of the following (in thousands):

	December 31, 2016	December 31, 2017
Accrued clinical trial cost	$1,098	$ 891
Accrued payroll and related benefits	310	311
Accrued consulting and legal	278	239
Accrued other	231	324
Accrued interest	67	192
Accrued expenses	$1,984	$1,957

4. FAIR VALUE OF FINANCIAL MEASUREMENTS

Assets and liabilities recorded at fair value on a recurring basis in the consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair values. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The standard describes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value which are the following:

Level 1 – Quoted prices in active markets for identical assets or liabilities.

Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are

VACCINEX, INC.

Notes to Consolidated Financial Statements

observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The assets' or liabilities' fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. The Company had Level 1 financial instruments carried at fair value in the form of money market funds.

The following table sets forth the fair value of the Company's financial assets by level within the fair value hierarchy (in thousands):

	December 31, 2016			
	Fair Value	Level 1	Level 2	Level 3
Financial Assets:				
Money market fund (included in cash and cash equivalents)	$ 331	$ 331	$ –	$ –
Total Financial Assets	$ 331	$ 331	$ –	$ –
Financial Liabilities:				
Derivative liability	$ 694	$ –	$ –	$ 694
Total Financial Liabilities	$ 694	$ –	$ –	$ 694

	December 31, 2017			
	Fair Value	Level 1	Level 2	Level 3
Financial Assets:				
Money market fund (included in cash and cash equivalents)	$ 1,011	$1,011	$ –	$ –
Total Financial Assets	$ 1,011	$1,011	$ –	$ –
Financial Liabilities:				
Derivative liabilities	$ 369	$ –	$ –	$ 369
Total Financial Liabilities	$ 369	$ –	$ –	$ 369

The Company did not transfer any assets measured at fair value on a recurring basis to or from Level 1 and Level 2 during the years ended December 31, 2016 and 2017.

VACCINEX, INC.

Notes to Consolidated Financial Statements

The following table sets forth a summary of the changes in the fair value of the Company's Level 3 financial instruments as follows (in thousands):

	Derivative Liability
Balance – January 1, 2016	$ 13,296
Issuance of the March 2016 Notes and the June 2016 Note	1,482
Change in fair value	(9,310)
Conversion of the underlying convertible promissory notes and related embedded derivative liability into shares of Series D redeemable convertible preferred	(4,774)
Balance – December 31, 2016	694
Issuance of the January 2017 Notes	3,418
Change in fair value	(3,743)
Balance – December 31, 2017	$ 369

Level 3 instruments consist of the Company's embedded derivative liabilities related to conversion features within the outstanding convertible promissory notes and a free-standing derivative related to an option to purchase shares in a future equity financing as of December 31, 2016 and 2017.

The fair value of the derivative liabilities were measured using a with-and-without valuation methodology. Inputs used to determine the estimated fair value of the derivative instruments include the probability estimates of potential settlement scenarios for the convertible promissory notes, a present value discount rate and an estimate of the expected timing of settlement. Certain unobservable inputs used in the fair value measurement of the derivative instruments associated with the convertible promissory notes are the scenario probabilities and the discount rate estimated at the valuation date. Generally, an increase or decrease in the discount rate would result in a directionally opposite impact to the fair value measurement of the derivative instruments. Also, changes in the probability scenarios would have varying impacts depending on the weighting of each specific scenario. As discussed further in Note 6, heavier weighting towards a qualified financing, including an IPO, would result in an increase in the fair value of the derivative instruments associated with the conversion option.

From the proceeds of the convertible promissory notes, a portion equal to the fair value of the derivative instruments was recognized as an additional debt discount and as derivative liabilities on the consolidated balance sheet upon issuance of the respective convertible promissory notes. The derivative liabilities require periodic remeasurements to fair value while the derivative is outstanding and, accordingly, the Company recognized an unrealized gain of $9.3 million and $3.7 million from the remeasurement of the derivative liabilities associated with the convertible promissory notes for the year ended December 31, 2016 and 2017, and presents such charge in its consolidated statements of operations as changes in fair value of derivative liabilities.

5. LICENSE AND SERVICE AGREEMENT

In November 2017, the Company entered into a license agreement with VX3 (the VX3 License Agreement), which was formed by a group of Canadian investors including the Company's majority stockholder, FCMI Parent. Under the VX3 License Agreement, the Company granted VX3 the license to use, make, have made, sell, offer and import VX15 for the treatment of Huntington's disease in the U.S. and Canada. Pursuant to the VX3 License Agreement, VX3 agreed to pay the Company up to an aggregate of $32.0 million in milestone payments and to share any VX15 profits and sublicensing revenue under the agreement in an amount based on a calculation set forth

in the agreement. The Company also entered into a services agreement with VX3 (the Services Agreement), pursuant to which the Company will carry out development activities for VX15 for the treatment of Huntington's disease in the U.S. and Canada in exchange for services payments from VX3, including a payment of $11.9 million for 2017. The VX3 License Agreement expires upon the last to expire licensed patent, and may be terminated by either party upon uncured material breach, the occurrence of certain transactions or financings including the consummation of an initial public offering by the Company, uncured failure of VX3 to make any payment due under the services agreement, or upon written notice after November 6, 2020. The Services Agreement may be terminated by either party upon uncured material breach and is automatically terminated upon termination of the VX3 License Agreement. The VX3 License Agreement provides that upon termination, the Company will issue to VX3 or its designees the number of shares of the Company's common stock equal to the lesser of (1) the aggregate of all payments made to VX3 by the Canadian investors divided by $1.82 and (2) the then fair market value of VX3 divided by the then fair market value of the Company's share of our common stock.

The Company determined VX3 to be a variable interest entity (VIE) in which the Company is primary beneficiary. As such, the Company recorded the gross proceeds of $12.0 million received from VX3 as a capital contribution from noncontrolling interests on the consolidated financial statements as of and for the year ended December 31, 2017. In February 2018, the Services Agreement was amended to provide that VX3 will provide another $8.0 million to sponsor the Company development activities in 2018. The $8.0 million was received by the Company in March 2018. See Note 15.

6. CONVERTIBLE PROMISSORY NOTES

During the years ended December 31, 2016 and 2017, the Company has raised funds through the issuance of convertible promissory notes as follows:

- In February 2016, the Company issued a $2.0 million convertible promissory note to a pharmaceutical company located in China (the February 2016 Note).
- In March 2016, the Company entered into convertible promissory note agreement whereby it issued, in the aggregate, $3.0 million of convertible promissory notes to a related party (the March 2016 Notes).
- In June 2016, the Company entered into a convertible promissory note agreement whereby it issued a $1.5 million convertible promissory note to a related party (the June 2016 Note).
- In January 2017, the Company entered into a convertible promissory note agreement whereby it agreed to issue, in the aggregate, $10.0 million of convertible promissory notes to a related party (the January 2017 Notes). $4.0 million of the January 2017 Notes were issued in January 2017, and the remaining $6.0 million were issued in $2.0 million equal installments in April, August and October 2017.

VACCINEX, INC.

Notes to Consolidated Financial Statements

As of December 31, 2016 and 2017, the outstanding notes consists of the June 2016 Note and a portion of the January 2017 Notes. The following table sets forth a summary of the outstanding convertible promissory notes (in thousands):

	December 31,	
	2016	2017
June 2016 Note	$1,500	$ 1,500
Unamortized debt discount	(463)	(316)
Net June 2016 Note	1,037	1,184
January 2017 Notes	–	4,000
Unamortized debt discount	–	(2,371)
Net January 2017 Notes	–	1,629
Total convertible promissory notes, related parties	$1,037	$ 2,813

February 2016 Note

The February 2016 Note accrued interest at an annual rate of 7%, or at an annual rate of 9% in the event of a default, and matured in December 2016. The Company incurred $22,000 of debt issuance costs for the February 2016 Note in February 2016. In December 2016, upon maturity, all outstanding principal and accrued interest of the February 2016 Note was converted into 625,637 shares of common stock at the price of $3.40 per share.

June 2016 Note

The June 2016 Note accrues interest at a compounded annual rate of 8% and has a maturity date three years from issuance, if not converted before then. Upon the occurrence of a default event, such as payment or performance defaults, bankruptcy, change in control (if elected to be treated as such by the lenders), or other violation, the interest rate would increase to a compounded annual rate of 12% until such time the default is cured. Upon maturity, the holders of these convertible promissory notes were to be repaid the outstanding principal plus all accrued interest. The Company also had the ability to prepay the convertible promissory notes, plus accrued interest, without penalty. The debt issuance costs for these convertible promissory notes are not material.

The June 2016 Note, together with accrued interest, is convertible (i) automatically upon a future qualifying financing event, which includes the sale of shares in a future preferred stock financing with gross proceeds of at least $5.0 million or the issuance of shares of common stock in an IPO, (ii) upon a change of control (unless the lenders elect to treat such event as a default), or (iii) upon a future non-qualifying financing event at the election of the lenders. Upon a future qualifying financing event, the outstanding principal, together with accrued interest, would convert into shares of the newly issued securities at 85% of the price paid in the financing. However, a closing of the sale of the Company's convertible preferred stock with minimum gross proceeds of $5.0 million within 90 days of the effective date of the related convertible promissory notes was not considered a qualifying financing event, and the outstanding principal, together with accrued interest, would convert into shares of the newly issued securities at 100% of the price paid in financing. Upon the election to convert the convertible promissory notes in the event of a change of control, the outstanding principal, together with accrued interest, would convert based on the conversion price of the Series C redeemable convertible preferred stock, which was $1.82 per share as of December 31, 2016 and 2017. Upon the election to convert the convertible promissory notes in the event of a non-qualifying financing event, the outstanding principal, together with accrued interest, would convert based on the lowest price per share paid for in the financing.

VACCINEX, INC.

Notes to Consolidated Financial Statements

January 2017 Notes

The $4.0 million of the January 2017 Notes, which was repaid on March 8, 2018, did not accrue interest, but the other $6.0 million of the January 2017 Notes issued in April, August and October 2017 accrued interest at an annual rate of 2%. The January 2017 Notes had a maturity date three years from issuance. Upon maturity, the holders of these convertible promissory notes were to be repaid the outstanding principal plus all accrued interest. The Company was also authorized to prepay the January 2017 Notes, plus accrued interest, without penalty. The debt issuance costs for these convertible promissory notes were not material.

Conversion Feature and Option

The conversion terms of the January 2017 Notes were similar to the June 2016 Note, except that the conversion price of the January 2017 Notes upon a qualifying financing was the lower of (1) $1.82 per share, or (2) 85% of the price per share of the newly issued securities. In connection with the issuance of the January 2017 Notes, the Company and the related party also entered into a side letter agreement that granted the related party an exclusive option to acquire shares with a fair value of up to $4.0 million in the next qualifying financing (the option arrangement), at a price per share equal to the conversion price of the January 2017 Notes, which option arrangement was waived on March 8, 2018.

In connection with the issuance of the convertible promissory notes, the Company determined that the automatic conversion feature in each of the March 2016 Notes, the June 2016 Note and the January 2017 Notes, and the option arrangement to be derivatives requiring bifurcation and separate accounting. In addition, the Company determined that the option arrangement was a free-standing derivative requiring separate accounting. Accordingly, the Company recorded aggregate derivative liabilities of $1.0 million, $0.5 million, and $3.4 million for March 2016 Notes, the June 2016 Note and the January 2017 Notes upon issuance, respectively, based on the fair value of the derivative instruments as determined by methods described further in Note 4.

From the proceeds of the convertible promissory notes, the portion equal to the fair value of the embedded derivative liabilities and the option derivative at the time of each respective issuance was recognized as a debt discount to be amortized to interest expense over the term of the related convertible promissory notes. The Company recognized interest expense of $1.5 million and $1.2 million for the amortization of the debt discounts during the years ended December 31, 2016 and 2017.

Conversion and Repayment of Convertible Promissory Notes

In August 2016, the Company raised $10.7 million in Series D redeemable convertible preferred stock financing, which qualified as a Qualified Financing (preferred stock financing with gross proceeds of at least $5.0 million) for the March 2016 Notes and several convertible promissory notes issued in prior years. The outstanding principal and accrued interest of these convertible promissory notes totaling $27.1 million was converted into 17,485,445 shares of Series D redeemable convertible preferred stock at $1.547 per share, or 85% of the Series D redeemable convertible preferred stock issuance price of $1.82 per share, as specified in each convertible promissory note agreement. The $8.6 million unamortized debt discount was reclassified into Series D redeemable convertible preferred stock. The related embedded derivative liabilities totaling $4.8 million were marked to fair value on the conversion date and were included in the accounting for the conversion of the convertible promissory notes to Series D redeemable convertible preferred stock.

Of the January 2017 Notes, $2.0 million issued in April 2017 was repaid along with accrued interest in May 2017 and $4.0 million issued in August and October 2017 was repaid along with accrued interest in November 2017. The related derivative liabilities were recorded at fair value on the conversion date and converted to Series D redeemable convertible preferred stock.

VACCINEX, INC.

Notes to Consolidated Financial Statements

As of December 31, 2016 and 2017, the Company was in compliance with all financial covenants in the convertible promissory notes.

As of December 31, 2017, the Company's scheduled future payments on outstanding convertible promissory notes are as follows (in thousands):

Year Ending December 31,	
2018	$ –
2019	1,500
2020	4,390
Total amount	5,890
Less: interest amount	(390)
Less: unamortized debt discount	(2,687)
Carrying value of convertible promissory notes (related party)	2,813
Less: current portion	–
Net of current portion (related party)	$ 2,813

7. COMMITMENTS AND CONTINGENCIES

Sublicense Termination Payments

In 2006, the Company licensed certain technology to EUSA Pharma SAS (EUSA) and in 2008, this technology was sublicensed by EUSA to Glaxo Group Limited (GSK) for development. GSK terminated its sub-license with EUSA in March 2010 and ownership of the technology reverted back to the Company. The Company may be required to pay EUSA up to $25.5 million plus ongoing royalty payments of 1% of net sales upon the occurrence of certain events involving the previously licensed technology, including Phase 3 clinical trial, FDA acceptance and approval and product sales. The Company is not planning any further commercialization efforts related to the previously licensed technology, and therefore does not anticipate any of the above described amounts will be paid.

Operating Leases

The Company leases its facilities from 1895 Management, Ltd., a New York corporation controlled by an entity affiliated with a director of the Company, under non-cancellable operating leases. The lease required monthly rental payments of $14,000 through October 31, 2018. The Company is responsible for all maintenance, utilities, insurance and taxes related to the facility.

As of December 31, 2017, the future minimum payments for the operating leases is $140,000 for the year ending December 31, 2018.

Rent expense incurred under operating leases was $168,000 for the years ended December 31, 2016 and 2017.

VACCINEX, INC.

Notes to Consolidated Financial Statements

Contingencies

The Company is subject to claims and assessments from time to time in the ordinary course of business. The Company records a provision for a liability when it believes that it is both probable that a liability has been incurred and the amount can be reasonably estimated. Significant judgment is required to determine both probability and the estimated amount.

In the normal course of business, the Company may become involved in legal proceedings. The Company will accrue a liability for such matters when it is probable that a liability has been incurred and the amount can be reasonably estimated. When only a range of possible loss can be established, the most probable amount in the range is accrued. If no amount within this range is a better estimate than any other amount within the range, the minimum amount in the range is accrued. The accrual for a litigation loss contingency might include, for example, estimates of potential damages, outside legal fees and other directly related costs expected to be incurred. As of December 31, 2017, the Company was not involved in any material legal proceedings.

8. COMMON STOCK RESERVED FOR ISSUANCE

Common stock has been reserved for the following potential future issuances:

	December 31,	
	2016	2017
Conversion of outstanding preferred stock	65,918,790	70,392,985
Shares underlying outstanding stock options	4,056,642	4,209,612
Shares available for future stock option grants	363,684	190,342
Exchange of Vaccinex Products, LP units	12,025,873	12,025,873
Conversion of VX3 units		
Conversion of outstanding convertible promissory notes		
Total shares of common stock reserved		

9. PREFERRED STOCK

The Company’s outstanding preferred stock has been issued in series, consisting of Series A convertible preferred stock and Series B, B-1, B-2, C and D redeemable convertible preferred stock (collectively referred to as preferred stock) since inception. In addition to the designations by series, the Company also designates the preferred stock as either convertible (i.e., not redeemable) or redeemable convertible (i.e., contingently redeemable). As discussed further below, the Series A preferred stock has been designated as convertible preferred stock as these shares are only redeemable in a true liquidation scenario whereby the Company is liquidated, dissolved, or wound down. The Series B, B-1, B-2, C and D preferred stock have been designated as redeemable convertible preferred stock as these shares are redeemable only upon a “Deemed Liquidation Event” as discussed further in the Redemption section below.

During the year ended December 31, 2016, the Company raised $10.7 million from the issuance of 5,906,593 shares of Series D redeemable convertible preferred stock at the price of $1.82 per share to an existing Series C investor, two new investors, and certain convertible promissory note investors. In May and June 2017, the Company raised an additional $8.0 million from the issuance of 4,395,604 shares of Series D redeemable convertible preferred stock to one investor at $1.82 per share.

VACCINEX, INC.

Notes to Consolidated Financial Statements

The issuance of Series D redeemable convertible preferred stock at the price of $1.82 per share triggered the downward revision to the conversion price of Series B-2 redeemable convertible preferred stock and resulted in the conversion price to decrease from $3.10 to $2.53 per share, effective July 15, 2016, and again to $2.50 per share, effective May 31, 2017.

In connection with the issuance of the Series D redeemable convertible preferred stock, the Company also modified the terms of Series C redeemable convertible preferred stock by (i) forgiving the accrued but unpaid cumulative dividend of $2.3 million; (ii) updating the previously cumulative dividends to be non-cumulative; and (iii) decreasing the conversion price of Series C redeemable convertible preferred stock from $3.40 to $1.82 per share effective July 15, 2016.

The Company determined the changes to the Series C redeemable convertible preferred stock terms to be a modification. Based on an analysis of the fair value of the Series C redeemable convertible preferred stock before and after the modification, and it was determined that the fair value of the Series C redeemable convertible preferred stock increased by $9.1 million due to the modification. Accordingly, the Company increased the Series C carrying value to $33.6 million. The $9.1 million increase in the fair value was recognized as a deemed dividend and was recorded as an increase to accumulated deficit.

As discussed in Note 6, in August 2016 the outstanding principal and accrued interest of various convertible promissory notes totaling $27.1 million was converted into 17,485,445 shares of the Series D redeemable convertible preferred stock at $1.547 per share, or 85% of the Series D redeemable convertible preferred stock issuance price of $1.82 per share.

The Company's redeemable convertible preferred stock consisted of the following (dollars in thousands):

	December 31, 2016				
	Designated Shares Authorized	Shares Issued	Shares Outstanding	Aggregate Liquidation Preference	Net Carrying Value
Series B	6,500,000	6,335,543	6,335,380	$ 26,153	$ 9,717
Series B-1	6,417,000	6,416,144	6,416,144	17,929	9,945
Series B-2	7,500,000	5,344,748	5,344,748	17,894	16,568
Series C	12,400,000	7,205,882	7,205,882	24,500	33,579
Series D	23,500,000	23,392,038	23,392,038	42,574	33,927
Total	56,317,000	48,694,355	48,694,192	$ 129,050	$ 103,736

	December 31, 2017				
	Designated Shares Authorized	Shares Issued	Shares Outstanding	Aggregate Liquidation Preference	Net Carrying Value
Series B	6,500,000	6,335,543	6,335,380	$ 27,242	$ 9,717
Series B-1	6,417,000	6,416,144	6,416,144	18,725	9,945
Series B-2	7,500,000	5,344,748	5,344,748	19,220	16,568
Series C	12,400,000	7,205,882	7,205,882	24,500	33,579
Series D	33,500,000	27,787,642	27,787,642	50,574	41,909
Total	66,317,000	53,089,959	53,089,796	$ 140,261	$ 111,718

VACCINEX, INC.

Notes to Consolidated Financial Statements

As of December 31, 2016 and 2017, the Company had authorized, issued and outstanding 5,702,450 shares designated as Series A convertible preferred stock with an aggregate liquidation preference and net carrying value of $7.7 million.

The Company's preferred stock have the following rights, preferences, privileges and restrictions:

Dividends

The holders of Series D redeemable convertible preferred stock are entitled to receive dividends only when (1) the board of directors declare a dividend payable upon outstanding shares of the Series D redeemable convertible preferred stock, or (2) the board of directors declare a dividend payable upon outstanding shares of Series A convertible preferred stock and Series B, B-1, B-2, and C redeemable convertible preferred stock and common stock, in which event, the board of directors shall contemporaneously also declare a dividend to the holders of the Series D redeemable convertible preferred stock as though the shares had been fully converted into shares of common stock on the declaration date. The second scenario will not apply if the dividend payable declared by the board of directors are preferential dividends for Series B, B-1 and B-2 redeemable convertible preferred stock.

The holders of Series C redeemable convertible preferred stock were entitled to receive annual cumulative dividends at the per annum rate of 3% of the purchase price of $3.40 per share, if declared by the board of directors, prior and in preference to any declaration or payment of any dividends on the Series A convertible preferred stock and Series B, B-1, and B-2 redeemable convertible preferred stock and common stock. However, in July 2016 upon the issuance of Series D redeemable convertible preferred stock, the $2.3 million cumulative and unpaid dividend of Series C redeemable convertible preferred stock was forgiven, and the annual dividends rate of 3% per annum of the purchase price of $3.40 per share became non-cumulative.

The holders of Series B, B-1 and B-2 redeemable convertible preferred stock are entitled to annual cumulative dividends at the per annum rate of 8% of each respective purchase price of $2.15, $1.55 and $3.10 per share, if declared by the board of directors, prior and in preference to any declaration or payment of any dividends on the Series A convertible preferred stock and common stock.

The holders of Series A convertible preferred stock are entitled to receive non-cumulative dividends, if declared by the board of directors on either Series A convertible preferred stock or common stock, and in the event of the latter, the holders of Series A convertible preferred stock will participate in such dividends payment on an as-if-converted basis.

The Company has not recorded a liability for cumulative and unpaid dividends as of December 31, 2016 and 2017 as no dividends have been declared by the Company.

Voting Rights

Each share of preferred stock is entitled to voting rights equal to the number of shares of common stock into which each share could be converted. The holders of shares of the preferred stock vote with holders of the common stock as a single class on all matters.

Conversion Rights

Each share of Series A convertible preferred stock and Series B, B-1, B-2, C and D redeemable convertible preferred stock is convertible by the holder at any time into common stock. The conversion rate is determined by

dividing the original purchase price of $1.3475, $2.15, $1.55, $ 3.10, $3.40 and $1.82 per share for Series A convertible preferred stock and Series B, B-1, B-2, C and D redeemable convertible preferred stock by the conversion price of $1.3475, $1.31, $1.55, $2.53, $1.82 and $1.82 per share for Series A convertible preferred stock and Series B, B-1, B-2, C and D redeemable convertible preferred stock as of December 31, 2016 and 2017.

The shares of Series C and Series D redeemable convertible preferred stock will automatically convert upon the occurrence of (i) the closing of an underwritten public offering at an offering price per share of not less than $5.00 per share and with gross proceeds to the Company of not less than $30.0 million or (ii) on the date specified by written consent or vote by the majority of the holders of the then outstanding shares of Series B, B-1, B-2, C and D redeemable convertible preferred stock voting as a single class on an as-converted basis.

The shares of Series B, B-1 or B-2 redeemable convertible preferred stock will automatically convert upon the occurrence of: (i) the closing of an underwritten public offering at an offering per share price of not less than two times the then applicable conversion prices for each series (in the event of Series B and B-1 redeemable convertible preferred stock) or not less than $5.00 per share (in the event of Series B-2 redeemable convertible preferred stock) and with gross proceeds to the Company of not less than $15.0 million; (ii) a qualified sale of the Company whereby the holders of common stock then issued and outstanding, including the conversion of outstanding shares of Series B, B-1 or B-2 redeemable convertible preferred stock, will be entitled to receive gross proceeds from such transaction on a per share basis of no less than two times of then applicable conversion prices for each Series; or (iii) on the date specified by written consent or vote by the majority of the holders of the then outstanding shares of Series B, B-1 or B-2 redeemable convertible preferred stock.

The shares of Series B-1 and B-2 redeemable convertible preferred stock also automatically convert on the date specified by written consent or vote of two-thirds of the holders of the then outstanding shares of Series B-1 and B-2 redeemable convertible preferred stock, voting as a single class on an as-converted basis.

The shares of Series A convertible preferred stock automatically convert into common stock upon the earlier of (i) the closing of an underwritten public offering or (ii) the affirmative vote of a majority of the holders of the then outstanding shares of Series A convertible preferred stock.

Liquidation Preference

Upon any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary, the holders of the Series C and D redeemable convertible preferred stock are entitled to receive, before any distribution or payment is made upon any shares of the Series A convertible preferred stock and Series B, B-1 and B-2 redeemable convertible preferred stock and common stock, an amount equal to $3.40 per share and $1.82 per share, respectively, plus any declared or accrued but unpaid dividends, for Series C and Series D redeemable convertible preferred stock. After payment to the holders of Series C and Series D redeemable convertible preferred stock, the holders of Series B, B-1 and B-2 redeemable convertible preferred stock, prior to any distribution to the holders of Series A convertible preferred stock and common stock, are entitled to receive an amount equal to $2.15, $1.55 and $3.10 per share, plus any declared or accrued but unpaid dividends. After payment to the holders of Series B, B-1, B-2, C and D redeemable convertible preferred stock, the holders of Series A convertible preferred stock are entitled to receive an amount equal to $1.3475 per share plus all declared or accrued but unpaid dividends.

Redemption

The shares of Series B, B-1, B-2, C and D redeemable convertible preferred stock are only redeemable upon a “Deemed Liquidation Event”, which includes certain events that are outside the control of the Company such as

the sale or merger of the Company in certain scenarios. Further, these shares do not contain any provisions that would ensure the holders are entitled to the same form of consideration upon the occurrence of a "Deemed Liquidation Event". Accordingly, the shares of Series B, B-1, B-2, C and D redeemable convertible preferred stock are considered contingently redeemable and, therefore, classified outside of stockholders' deficit.

The shares of Series A are only redeemable upon a regular liquidation event within the Company's control and are not redeemable at the option of the holder or under any other scenarios. Therefore, the shares of Series A convertible preferred stock are classified within stockholders' (deficit) equity.

10. STOCK-BASED COMPENSATION

Employee Equity Plans

In 2011, the Company adopted the 2011 Employee Equity Plan (2011 Plan) for the purpose of granting stock and stock option awards to employees, officers, directors, advisors and consultants, including stock options and stock appreciation rights. Stock options granted under the 2011 Plan may be either incentive stock options or nonstatutory stock options. Incentive stock options may be granted to employees with exercise prices of no less than the fair value of the common stock on the grant date. If at the time of grant, the optionee owns stock representing more than 10% of the voting power of all classes of stock of the Company, the exercise price must be at least 110% of the fair value of the common stock on the grant date as determined by the board of directors. Nonstatutory stock options may be granted to employees or consultants at exercise prices of less than the fair market value of a share of common stock on the date the nonstatutory stock option is granted but shall under no circumstances be less than adequate consideration as determined by the board of directors for such a share. Vesting period of stock option grants is determined by the board of directors, ranging from zero to eight years. Stock options granted under the 2011 Plan expire in five or ten years from the date of grant.

A summary of the Company's stock option activity and related information is as follows:

		Stock Options Outstanding			
	Shares Available for Grant	Shares Subject to Stock Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Balance as of January 1, 2016	210,514	4,209,812	$ 0.87	9.0	$ –
Granted	(170,000)	170,000	1.36		
Exercised	–	–	–		
Canceled	323,170	(323,170)	0.79		
Balance as of December 31, 2016	363,684	4,056,642	0.90	8.1	1,978
Granted	(339,760)	339,760	1.36		
Exercised	–	(20,372)	0.71		
Canceled	166,418	(166,418)	1.46		
Balance as of December 31, 2017	190,342	4,209,612	$ 0.92	7.4	$ 5,021
Exercisable as of December 31, 2017		3,749,861	$ 0.91	7.2	$ 4,502

The weighted-average grant date fair value of stock options granted to employees for the years ended December 31, 2016 and 2017 was $0.89 and $0.90 per share. The aggregate grant date fair value of stock options that vested during the years ended December 31, 2016 and 2017 was $314,000 and $300,000.

VACCINEX, INC.

Notes to Consolidated Financial Statements

The intrinsic value of stock options vested and expected to vest and exercisable is calculated based on the difference between the exercise price and the fair value of the Company's common stock as of December 31, 2016 and 2017. The intrinsic value of exercised stock options is the difference between the fair value of the underlying common stock and the exercise price as of the exercise date. No stock options were exercised during the year ended December 31, 2016. The intrinsic value of stock options exercised was $29,000 during the year ended December 31, 2017.

As of December 31, 2017, total unrecognized compensation cost related to stock options granted to employees was $216,000 which is expected to be recognized over a weighted-average period of 1.9 years.

Determination of Fair Value

The determination of the fair value of stock options on the date of grant using a stock option-pricing model is affected by the estimated fair value of the Company's common stock, as well as assumptions regarding a number of variables that are complex, subjective and generally require significant judgment to determine. The assumptions used to calculate the fair value of stock options were:

Fair Value of Common Stock

The fair value of the common stock underlying the stock options was determined by the Company's board of directors, with input from management and third-party valuations.

Expected Term

The expected term represents the period that the Company's stock option awards are expected to be outstanding. Stock options granted have a maximum contractual life of ten years. The Company estimates the expected term of the stock option to be six years based on historical data on employee exercises and post-vesting employment termination behavior.

Expected Volatility

As the Company does not have a trading history for its common stock, the expected stock price volatility for the Company's common stock was estimated by taking the average historic price volatility for industry peers based on daily price observations over a period equivalent to the expected term of the stock option grants. Industry peers consist of several public companies in the Company's industry which are of similar size, complexity and stage of development. The Company intends to continue to consistently apply this process using the same or similar public companies until a sufficient amount of historical information regarding the volatility of its own share price becomes available, or unless circumstances change such that the identified companies are no longer similar to the Company, in which case, more suitable companies whose share prices are publicly available would be used in the calculation.

Risk-Free Interest Rate

The risk-free interest rate is based on the U.S. Treasury rate, with maturities similar to the expected term of the stock options.

Expected Dividend Yield

The Company does not anticipate paying any dividends in the foreseeable future and, therefore, uses an expected dividend yield of zero.

VACCINEX, INC.

Notes to Consolidated Financial Statements

On January 1, 2017, the Company adopted ASU No. 2016-09 and started to account for forfeitures of stock options as they occur. The Company recorded the cumulative effect adjustment to accumulated deficit and the impact was not material.

The grant date fair value of employee stock options was estimated using a Black-Scholes option-pricing model with the following weighted-average assumptions:

	Year Ended December 31,	
	2016	2017
Expected term (in years)	6.0	6.0
Expected volatility	75.0%	75.0%
Risk-free interest rate	1.4%	2.0%
Expected dividend yield	–%	–%

Total stock-based compensation expense recognized in the consolidated statements of operations is as follows (in thousands):

	Year Ended December 31,	
	2016	2017
Research and development	$ 65	$ 54
General and administrative	70	265
Total stock-based compensation expense	$135	$319

11. INCOME TAXES

On December 22, 2017, the Tax Cuts and Jobs Act (the Tax Act) was signed into law. The Tax Act makes broad and complex changes to the Code including, but not limited to, reducing the U.S. federal corporate income tax rate. While the Tax Act reduces the U.S. federal corporate income tax rate from 35% to 21% for tax years beginning after December 31, 2017, ASC 740 requires the Company to remeasure its deferred tax balances in 2017 in accordance with the 2018 rate reduction.

The SEC staff issued Staff Accounting Bulletin 118 (SAB 118), which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the U.S. tax reform enactment date for companies to complete the accounting under ASC 740. In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the U.S. tax reform for which the accounting under ASC 740 is complete. Specifically, the Company revalued its U.S. deferred tax assets and liabilities due to the federal income tax rate reduction from 35% to 21%. Since the Company has provided a full valuation allowance against its deferred tax assets, the revaluation of the deferred tax assets did not have a material impact on any period presented. The ultimate impact of the income tax effects of the Tax Act may differ due to, among other things, additional analysis, changes in interpretations, and additional regulatory guidance that may be issued as a result of the Tax Act. The accounting is expected to be complete when the Company's 2017 U.S. corporate income tax return is filed in 2018.

The Company did not record provision for income taxes for the years ended December 31, 2016 and 2017. The Company's deferred income tax assets continue to be offset by a valuation allowance. The Company has

recorded a reduction of deferred income tax assets of $20.7 million in the year ended December 31, 2017 related to the remeasurement of our net deferred tax assets to reflect the U.S. federal corporate income tax rate reduction to 21%, which was fully offset by a change to the Company's valuation allowance.

The reconciliation of federal statutory income tax rate to the Company's effective income tax rate is as follows:

	Year Ended December 31,	
	2016	2017
Expected income tax benefit at the federal statutory rate	34.0%	34.0%
Federal tax rate change effect	–	(110.3)
State taxes, net of federal benefit	7.4	5.4
Research and development credit, net	19.5	17.0
Non-deductible items and others	(5.3)	0.7
Change in valuation allowance	(55.6)	53.2
Total	0.0%	0.0%

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The principal components of the Company's deferred tax assets consisted of the following as of December 31, 2016 and 2017 (in thousands):

	December 31,	
	2016	2017
Deferred tax assets:		
Federal and state net operating loss carryforwards	$ 58,664	$ 45,057
Research and development tax credits	6,953	11,542
Depreciation and amortization	843	504
Reserves and accruals	391	115
Derivative liabilities	266	96
Deferred revenue	–	78
Other	188	330
Total deferred tax assets	67,305	57,722
Less: valuation allowance	(67,128)	(57,026)
Net deferred tax assets	$ 177	$ 696
Deferred tax liability:		
Debt discount	(177)	(696)
Net deferred tax assets and liability	$ –	$ –

The Company's valuation allowance increased by $10.7 million and decreased by $10.0 million for the years ended December 31, 2016 and 2017 in order to maintain a full valuation allowance against its deferred tax assets. Based on the Company's history of losses, the Company recorded a full valuation allowance against its deferred tax assets as of December 31, 2016 and 2017. The Company intends to maintain a valuation allowance until sufficient positive evidence exists to support a reversal of the valuation allowance.

VACCINEX, INC.

Notes to Consolidated Financial Statements

As of December 31, 2017, the Company had federal and state operating loss carryforwards of $170.2 million and $181.3 million, which begin to expire in the year ending December 31, 2024 and 2034, respectively. The Company had federal research and development tax credit carryforwards of $11.5 million as of December 31, 2017. This credit begins to expire from in the year ending December 31, 2021.

Under the provisions of Section 382 of the Internal Revenue Code (IRC), net operating loss and credit carryforwards and other tax attributes may be subject to limitation if there has been a significant change in ownership of the Company, as defined by the IRC. Future owner or equity shifts, including an IPO, could result in limitations on net operating loss and credit carryforwards.

The Company files income tax returns in the U.S. federal jurisdiction as well as many U.S. states jurisdictions. The tax years from January 1, 2014 to December 31, 2017 remain open to examination by the major jurisdictions in which the Company are subject to tax. Fiscal years outside the normal statute of limitation remain open to audit by tax authorities due to tax attributes generated in those early years, which have been carried forward and may be audited in subsequent years when utilized.

The Company evaluates tax positions for recognition using a more-likely-than-not recognition threshold, and those tax positions eligible for recognition are measured as the largest amount of tax benefit that is greater than 50% likely of being realized upon the effective settlement with a taxing authority that has full knowledge of all relevant information. As of December 31, 2016 and 2017, the Company had no unrecognized income tax benefits that would affect the Company's effective tax rate if recognized.

12. NET LOSS AND PRO FORMA NET LOSS PER SHARE ATTRIBUTABLE TO COMMON STOCKHOLDERS (Unaudited)

The following table sets forth the computation of the Company's basic and diluted net loss per share for the periods presented (in thousands, except share and per share data):

	Year Ended December 31,	
	2016	2017
Net loss	$ (13,943)	$ (18,759)
Net loss attributable to noncontrolling interests	–	37
Net loss attributable to Vaccinex, Inc.	(13,943)	(18,722)
Cumulative dividends on preferred stock	(3,211)	(3,211)
Deemed dividend from Series C redeemable convertible preferred stock modification	(9,079)	–
Net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (26,233)	$ (21,933)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (2.53)	$ (1.99)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	10,381,417	11,019,375

VACCINEX, INC.

Notes to Consolidated Financial Statements

The following weighted-average common stock equivalents were excluded from the calculation of diluted net income (loss) per share for the periods presented as they had an anti-dilutive effect:

	Year Ended December 31,	
	2016	2017
Preferred stock (if converted)	46,756,901	68,376,577
Options to purchase common stock	4,183,704	4,083,780
Contingently issuable common stock upon exchange of Vaccinex Products, LP units	12,025,873	12,025,873
Contingently issuable common stock upon conversion of convertible promissory notes		
Contingently issuable common stock upon exchange of VX3 units		

The following table sets forth the computation of the unaudited pro forma basic and diluted net loss per share attributable to common stockholders (in thousands, except share and per share data):

	Year Ended December 31, 2017
Net loss attributable to Vaccinex, Inc. common stockholders	$ (21,933)
Adjustment to interest expense related to repayment of convertible promissory notes, net of tax	141
Adjustment to dividends on preferred stock	3,211
Adjustment to interest expense related to the amortization of debt discount	1,217
Adjustment to change in fair value of derivative liabilities	3,743
Pro forma net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)	$ (13,621)
Weighted-average shares used in computing net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted	11,019,375
Pro forma adjustment to reflect assumed conversion of convertible preferred stock	68,376,577
Pro forma adjustment to reflect assumed conversion of convertible promissory notes	–
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted (unaudited)	
Pro forma net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted (unaudited)	$

13. EMPLOYEE BENEFIT PLAN

The Company sponsors a 401(k) plan that stipulates that eligible employees can elect to contribute to the 401(k) plan, subject to certain limitations, up to the lesser of the statutory maximum or 100% of eligible compensation on a pre-tax basis. Through December 31, 2016 and 2017, the Company has not elected to match employee contributions as permitted by the plan. The Company pays the administrative costs for the plan.

14. RELATED PARTY TRANSACTIONS

As discussed in Note 7, the Company also leases its facility from 1895 Management, Ltd., a New York corporation controlled by an entity affiliated with the Company’s chairman and major stockholder of the Company. Rent expense incurred under this operating lease was $168,000 for each of the years ended December 31, 2016 and 2017.

VACCINEX, INC.

Notes to Consolidated Financial Statements

The Company issued in aggregate $3.0 million convertible promissory note to FCMI Parent Co. (FCMI Parent) and $1.5 million convertible promissory note to Vaccinex (Rochester), L.L.C. (Vaccinex LLC) during the year ended December 31, 2016. FCMI Parent is owned and controlled by the Company's chairman. Vaccinex LLC is owned and controlled by the Company's Chief Executive Officer. A total of $23.2 million of the related parties' convertible promissory notes and accrued interest were converted into 14,993,957 shares of Series D redeemable convertible preferred stock in August 2016 upon the Series D redeemable convertible preferred stock financing. During the year ended December 31, 2017, the Company issued an additional $10.0 million in convertible promissory notes to FCMI Parent. The aggregate accrued interest payable and interest expense derived from these convertible promissory notes to related parties were $67,000 and $1.1 million as of and for the year ended December 31, 2016, and $192,000 and $138,000 as of and for the year ended December 31, 2017. The aggregate balance of $1.0 million and $2.8 million in convertible promissory notes to related parties was outstanding as of December 31, 2016 and 2017. See Note 6 for more information.

During the year ended December 31, 2017, the Company raised $8.0 million from the issuance of 4,395,604 shares of Series D redeemable convertible preferred stock to the Company's chairman at $1.82 per share. See Note 9 for more information.

15. SUBSEQUENT EVENTS

The Company amended the VX3 Partnership Agreement and Service Agreement at the end of February 2018. Under this amendment, FCMI Parent agreed to make an additional capital contribution of $8.0 million to the VX3 partnership. The funds will be used to sponsor certain Company research and development activities during 2018. In March 2018, the Company received the $8.0 million capital contribution from VX3 noncontrolling interests.

In March 2018, the Company used $4.0 million to repay the January 2017 Note. The option arrangement associated with the January 2017 Note was also waived upon the repayment of the January 2017 Note.

The Company has evaluated subsequent events through April 13, 2018, the date on which the December 31, 2017 consolidated financial statements were originally issued.

Shares

Common Stock

PRELIMINARY PROSPECTUS

, 2018

Until and including , 2018 (25 days after the date of this prospectus), all dealers that buy, sell or trade shares of our common stock, whether or not participating in this offering, may be required to deliver a prospectus. This delivery requirement is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses, other than underwriting discounts and commissions, payable in connection with the registration of the common stock hereunder. All amounts are estimates, except the SEC registration fee, the FINRA filing fee and The NASDAQ Global Market listing fee.

	Amount
SEC registration fee	$ *
FINRA filing fee	*
NASDAQ Global Market listing fee	*
Accountants' fees and expenses	*
Legal fees and expenses	*
Transfer Agent's fees and expenses	*
Printing and engraving expenses	*
Miscellaneous	*

* To be filed by amendment.

Item 14. Indemnification of Directors and Officers.

Section 102(b)(7) of the DGCL provides that a Delaware corporation, in its certificate of incorporation, may limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director, except for liability for any:

- transaction from which the director derived an improper personal benefit;
- act or omission not in good faith or that involved intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares; or
- breach of the director's duty of loyalty to the corporation or its stockholders.

Section 145(a) of the DGCL provides, in general, that a Delaware corporation may indemnify any person who was or is a party, or is threatened to be made a party, to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) because that person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or other enterprise. The indemnity may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, so long as the person acted in good faith and in a manner he or she reasonably believed was in or not opposed to the corporation's best interests, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful.

Section 145(b) of the DGCL provides, in general, that a Delaware corporation may indemnify any person who was or is a party, or is threatened to be made a party, to any threatened, pending or completed action or suit by or in the right of the corporation to obtain a judgment in its favor because the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or other enterprise. The indemnity may include expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action, so long as the person acted in good faith and in a manner the person reasonably

believed was in or not opposed to the corporation's best interests, except that no indemnification shall be permitted without judicial approval if a court has determined that the person is to be liable to the corporation with respect to such claim. Section 145(c) of the DGCL provides that, if a present or former director or officer has been successful in defense of any action referred to in Sections 145(a) and (b) of the DGCL, the corporation must indemnify such officer or director against the expenses (including attorneys' fees) he or she actually and reasonably incurred in connection with such action.

Section 145(g) of the DGCL provides, in general, that a corporation may purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or other enterprise against any liability asserted against and incurred by such person, in any such capacity, or arising out of his or her status as such, whether or not the corporation could indemnify the person against such liability under Section 145 of the DGCL.

Our amended and restated certificate of incorporation and our amended and restated bylaws, each of which will become effective immediately after the completion of this offering, provide for the indemnification of our directors and officers to the fullest extent permitted under the DGCL.

We intend to enter into separate indemnification agreements with our directors and officers in addition to the indemnification provided for in our amended and restated bylaws. These indemnification agreements provide, among other things, that we will indemnify our directors and officers for certain expenses, including damages, judgments, fines, penalties, settlements and costs and attorneys' fees and disbursements, incurred by a director or officer in any claim, action or proceeding arising in his or her capacity as a director or officer of our company or in connection with service at our request for another corporation or entity. The indemnification agreements also provide for procedures that will apply in the event that a director or officer makes a claim for indemnification.

We also maintain a directors' and officers' insurance policy pursuant to which our directors and officers are insured against liability for actions taken in their capacities as directors and officers.

We intend to enter into an underwriting agreement, which provides for indemnification by the underwriters of us, our officers and directors, for certain liabilities, including liabilities arising under the Securities Act.

See also the undertakings set out in response to Item 17 herein.

Item 15. Recent Sales of Unregistered Securities.

The following list sets forth information regarding all securities sold or granted by us within the last three years that were not registered under the Securities Act, and the consideration, if any, received by us for such securities:

Issuances of Capital Stock

(1) Since April 13, 2015, we have issued an aggregate of 38,428 shares of our common stock to our directors, officers and employees pursuant to the exercise of stock options under our 2001 Plan and 2011 Plan at exercise prices ranging from $0.71 to $1.49 per share.

(2) During 2016, we issued and sold 5,906,593 shares of Series D redeemable convertible preferred stock at an issuance price of $1.82 per share for an aggregate purchase price of approximately $10.7 million in cash to existing and new investors over multiple closings.

(3) In December 2016, we issued 625,637 shares of our common stock to a pharmaceutical company located in China upon the conversion at a price of $3.40 per share of all the outstanding principal and accrued interest of a convertible promissory note.

(4) In August 2016, we issued 17,485,445 shares of Series D redeemable convertible preferred stock at $1.547 per share, or 85% of the Series D redeemable convertible preferred stock issuance price of $1.82 per share, upon the conversion of certain convertible promissory notes totaling $27.1 million in outstanding principal and accrued interest.

(5) In May, June and July 2017, we issued and sold 4,395,604 shares of Series D redeemable convertible preferred stock at an issuance price of $1.82 per share for an aggregate purchase price of approximately $8.0 million in cash to Albert D. Friedberg, the chairman of our board of directors.

Convertible Promissory Note Financings

(6) Since April 13, 2015, in connection with bridge loan financings, we issued convertible promissory notes to ten accredited investors in an aggregate principal amount of approximately $28.5 million.

Grants of Stock Options

(7) Since April 13, 2015, we granted to our directors, officers, employees, consultants and other service providers stock options to purchase an aggregate of 4,040,328 shares of our common stock under our 2011 Plan at exercise prices ranging from $0.71 to $1.49 per share.

We deemed the offers, sales and issuances of the securities described in paragraphs (1) through (6) above to be exempt from registration under the Securities Act, in reliance on Section 4(a)(2) of the Securities Act, including Regulation D and Rules 504 and 506 promulgated thereunder, relative to transactions by an issuer not involving a public offering. All purchasers of securities in transactions exempt from registration pursuant to Regulation D represented to us that they were accredited investors and were acquiring the shares for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

We deemed the grants of stock options described in paragraph (7) above to be exempt from registration under the Securities Act in reliance on Rule 701 of the Securities Act as offers and sales of securities under compensatory benefit plans and contracts relating to compensation in compliance with Rule 701. Each of the recipients of securities in any transaction exempt from registration either received or had adequate access, through employment, business or other relationships, to information about us.

All of the foregoing securities are deemed restricted securities for purposes of the Securities Act. The certificates representing the securities issued in the transactions described in this Item 15 included appropriate legends setting forth that the securities had not been offered or sold pursuant to a registration statement and describing the applicable restrictions on transfer of the securities. There were no underwriters employed in connection with any of the transactions set forth in this Item 15.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

See the Index to Exhibits attached to this registration statement, which is incorporated by reference herein.

(b) Financial Statement Schedules

No financial statement schedules are provided, because the information called for is not required or is shown either in the financial statements or the notes thereto.

Item 17. Undertakings.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) The registrant will provide to the underwriters at the closing as specified in the underwriting agreement, certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

(2) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective. For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Table of Contents

INDEX TO EXHIBITS

Exhibit Number	Exhibit Description
1.1*	Form of Underwriting Agreement.
3.1*	Amended and Restated Certificate of Incorporation to be in effect immediately after the completion of this offering.
3.2*	Amended and Restated Bylaws to be in effect immediately after the completion of this offering.
3.3	Amended and Restated Certificate of Incorporation, as currently in effect.
3.4	Amendment to Amended and Restated Certificate of Incorporation, dated May 22, 2017, as currently in effect.
3.5	Amendment to Amended and Restated Certificate of Incorporation, dated July 14, 2016.
3.6	Amendment to Amended and Restated Certificate of Incorporation, dated March 31, 2010.
3.7	Amendment to Amended and Restated Certificate of Incorporation, dated August 30, 2007.
3.8	Amended and Restated Series B Preferred Stock Certificate of Designation, as currently in effect.
3.9	Amendment to Amended and Restated Series B Preferred Stock Certificate of Designation, as currently in effect.
3.10	Second Amendment to Amended and Restated Series B Preferred Stock Certificate of Designation, as currently in effect.
3.11	Series B1 Convertible Preferred Stock Certificate of Designation, as currently in effect.
3.12	Certificate of Amendment to Series B1 Preferred Stock Certificate of Designation, as currently in effect.
3.13	Series B2 Convertible Preferred Stock Certificate of Designation, as currently in effect.
3.14	Certificate of Amendment to Series B2 Preferred Stock Certificate of Designation, as currently in effect.
3.15	Second Amended and Restated Series C Convertible Preferred Stock Certificate of Designation, as currently in effect.
3.16	Amended and Restated Series D Convertible Preferred Stock Certificate of Designation, as currently in effect.
3.17	Amended and Restated Bylaws, as currently in effect.
4.1	Specimen Common Stock Certificate.
5.1*	Opinion of Hogan Lovells US LLP.
10.1	First Amended and Restated Investor Rights Agreement, dated August 22, 2003, by and among the Company and the parties thereto.
10.2+	2001 Employee Equity Plan.
10.3+	Form of Stock Option Agreement under 2001 Employee Equity Plan.
10.4+	2011 Employee Equity Plan.
10.5+	Form of Stock Option Agreement under 2011 Employee Equity Plan.
10.6+*	2018 Omnibus Incentive Plan.
10.7+*	Form of Incentive Stock Option Agreement under 2018 Omnibus Incentive Plan.
10.8+*	Form of Non-Qualified Stock Option Agreement under 2018 Omnibus Incentive Plan.

Exhibit Number	Exhibit Description
10.9+*	Severance Pay Plan.
10.10+*	Form of Indemnification Agreement by and between the Company and each of its directors and officers.
10.11†	Exclusive License Agreement, dated December 29, 1998, by and between the Company and the University of Rochester.
10.12†	GPEx® Development and Manufacturing Agreement, dated January 13, 2010, by and between the Company and Catalent Pharma Solutions, LLC.
10.13†	GPEx® – Derived Cell Line Sale Agreement, dated January 13, 2010, by and between the Company and Catalent Pharma Solutions, LLC.
10.14	Amended and Restated Exchange Agreement, dated October 24, 2014, by and among the Company and the parties listed therein.
10.15†	Clinical Trial Collaboration and Supply Agreement, dated October 4, 2016, by and between the Company and Ares Trading S.A.
10.16*	License Agreement, dated November 6, 2017, by and between the Company and VX3 (DE) LP.
10.17*	Services Agreement, dated November 6, 2017, by and between the Company and VX3 (DE) LP.
10.18*	Consent and Amendment, dated February 28, 2018, by and among VX3 Inc., FCMI Parent Co., the Company and VX3 (DE) LP.
10.19*	Agreement, dated March 15, 2018, by and among the Company, VX3 (DE) LP, VX3 Inc., and each of the other parties on the signature pages thereto.
21.1	Subsidiaries of the Company.
23.1*	Consent of Independent Registered Accounting Firm.
23.2*	Consent of Hogan Lovells US LLP (included in Exhibit 5.1).
24.1*	Power of Attorney (included on the signature page to this registration statement).

* To be filed by amendment.
\+ Indicates a management contract or compensatory plan.
† Registrant has requested confidential treatment for certain portions of this exhibit. This exhibit omits the information subject to this confidentiality request. Omitted portions have been filed separately with the Securities and Exchange Commission.

Table of Contents

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant has duly caused this registration statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Rochester, in the State of New York, on this day of , 2018.

VACCINEX, INC.

By: _____
Maurice Zauderer, Ph.D.
President and Chief Executive Officer

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Maurice Zauderer, Ph.D. and Scott E. Royer, CFA, MBA and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this registration statement, including any and all post-effective amendments and amendments thereto, and any subsequent registration statement relating to the same offering as this registration statement that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

Signature	Title	Date
Maurice Zauderer, Ph.D.	President, Chief Executive Officer and Director (Principal Executive Officer)	, 2018
Scott E. Royer, CFA, MBA	Chief Financial Officer (Principal Financial and Accounting Officer)	, 2018
Albert D. Friedberg	Chairman of the Board	, 2018
Alejandro M. Berlin, M.D., MSc	Director	, 2018
Alan L. Crane	Director	, 2018
Jacob B. Frieberg	Director	, 2018
J. Jeffrey Goater	Director	, 2018

Table of Contents

Signature	Title	Date
Bala S. Manian, Ph.D.	Director	, 2018
Gerald E. Van Strydonck	Director	, 2018
Barbara Yanni	Director	, 2018

AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF VACCINEX, INC.

Vaccinex, Inc., a corporation organized and existing under the laws of the State of Delaware, hereby certifies as follows:

1. The present name of the Corporation is Vaccinex, Inc. (the "Corporation"), which is the name under which the Corporation was originally incorporated. The original Certificate of Incorporation of the Corporation was filed with the Secretary of State of the State of Delaware on April 6, 2001. A Certificate of Amendment of Certificate of Incorporation of the Corporation was filed with the Secretary of State of the State of Delaware on May 14, 2001. A Certificate of Designation of Series A Convertible Preferred Stock of the Corporation was filed with the Secretary of State of the State of Delaware on June 18, 2001.

2. The amendments to and the restatement of the Certificate of Incorporation herein certified have been duly adopted by the Corporation and its stockholders in accordance with the provisions of Sections 228, 242, and 245 of the General Corporation Law of the State of Delaware and written notice of the adoption of this Amended and Restated Certificate of Incorporation has been given as provided by Section 228 of the General Corporation Law of the State of Delaware to every stockholder of the Corporation entitled to such notice.

3. The Certificate of Incorporation of the Corporation, as amended and restated herein, shall at the effective time of this Amended and Restated Certificate of Incorporation, read as follows:

ARTICLE 1
NAME

The name of the Corporation is Vaccinex, Inc.

ARTICLE 2
MAILING ADDRESS

The mailing address of the Corporation is 1895 Mount Hope Avenue, Rochester, New York 14620.

ARTICLE 3
REGISTERED AGENT

The address of its registered agent in the State of Delaware is NCR, 615 South DuPont Highway, Kent County, Dover, Delaware, 19901. The name of the registered agent is National Corporate Research, Ltd.

ARTICLE 4
PURPOSE

The purpose for which the Corporation is organized is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of Delaware, and the Corporation shall have all powers necessary to engage in such acts or activities, including, but not limited to, the powers enumerated in the General Corporation Law of Delaware or any amendment thereto.

ARTICLE 5
CAPITAL STOCK

(a) **Common Stock.** The aggregate number of common shares (referred to in this Certificate of Incorporation as "Common Stock") which the Corporation has the authority to issue is forty million (40,000,000), $0.0001 par value per share. Each share of Common Stock has one vote on each matter submitted to a vote of the Corporation's stockholders. Subject to the provisions of applicable law and the rights of the holders of the outstanding shares of Preferred Stock, if any, the holders of shares of Common Stock are entitled to receive, when and as declared by the Corporation's Board of Directors out of the Corporation's assets legally available therefor, dividends or other distributions, whether payable in cash, property or securities of the Corporation; *provided* that no dividends shall be declared or paid on shares of Common Stock unless the Corporation shall have declared and paid to each holder of Preferred Stock a dividend equal to the dividend payable (including any accrued but undeclared dividends on Preferred Stock) to each such holder in accordance with this Certificate of Incorporation, as may be amended from time to time. The holders of shares of Common Stock are entitled to receive, in proportion to the number of shares of Common Stock held, the Corporation's net assets upon dissolution after any preferential amounts required to be paid or distributed to holders of outstanding shares of Preferred Stock, if any, are so paid or distributed.

(b) **Preferred Stock.** The aggregate number of preferred shares (referred to in this Certificate of Incorporation as "Preferred Stock") which the Corporation has authority to issue is twenty million (20,000,000), $0.001 par value per share. The Preferred Stock may be issued from time to time by the Board of Directors as shares of one or more series. The description of shares of each series of Preferred Stock, including any designations, preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption will be as set forth in resolutions adopted by the Board of Directors, and a certificate of amendment will be filed with the Delaware Secretary of State as required by law to be filed with respect to issuance of such Preferred Stock, prior to the issuance of any shares of such series.

The Board of Directors is expressly authorized, at any time, by adopting resolutions providing for are issuance of, or providing for a charge in the number of, shares of any particular series of Preferred Stock and, if and to the extent from time to time required by law, by filing a certificate of amendment which shall be effective without stockholder action, to increase the

number of shares included in each series of Preferred Stock, but not below the number of shares then issued, and to set in any one or more respects the designations, preferences, conversion or other rights, voting powers, restrictions, limitations as to dividends, qualifications, or terms and conditions of redemption relating to the shares of each such series. The authority of the Board of Directors with respect to each series of Preferred Stock includes, but is not limited to, setting or changing the following:

(i) the dividend rate, if any, on shares of such series, the times of payment and the date from which dividends are accumulated, if dividends are to be cumulative;

(ii) whether the shares of such series are redeemable and, if so, the redemption price and the terms and conditions of such redemption;

(iii) the Corporation's obligation, if any, to redeem shares of such series pursuant to a sinking fund;

(iv) whether shares of such series will be convertible into, or exchangeable for, shares of stock of any other class or classes and, if so, the terms and conditions of such conversion or exchange, including the price or prices or the rate or rates of conversion or exchange and the terms of adjustment, if any;

(v) whether the shares of such series have voting rights, in addition to the voting rights provided by law, and, if so, the extent of such voting rights;

(vi) the rights of the shares of such series in the event of voluntary or involuntary liquidation, dissolution or winding-up of the Corporation; and

(vii) any other relative rights, powers, preferences, qualifications, limitations or restrictions thereof relating to such series.

(c) **Series A Convertible Preferred Stock.** Five million seven hundred two thousand four hundred and fifty (5,702,450) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series A Convertible Preferred Stock" (hereinafter referred to as "Series A Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms are defined in Section 5(c)(x) below.

(i) Dividends. The holders of the Series A Convertible Preferred Stock shall be entitled to receive dividends only if the Board of Directors of the Corporation shall:

(A) declare a dividend payable upon outstanding shares of the Series A Convertible Preferred Stock; or

(B) declare a dividend payable upon outstanding shares of Common Stock, in which event, the Board shall contemporaneously declare a dividend such that the holders of the Series A Convertible Preferred Stock shall be entitled to receive the same per

share dividends to which such holders would have been entitled had the Series A Convertible Preferred Stock been fully converted into shares of Common Stock pursuant to the provisions of Section 5(c)(iii) hereof as of the record date for determining the holders of shares of Common Stock entitled to receive such dividend. No dividends shall be declared or paid on Series A Convertible Preferred Stock unless the Corporation shall have declared and paid to each holder of any other class or series of Preferred Stock (other than any class or series of Preferred Stock which expressly ranks subordinate to the Series A Convertible Preferred Stock in respect of dividends) a dividend equal to the dividend payable (including any accrued but undeclared dividends) to each such holder in accordance with this Certificate of Incorporation, as may be amended from time to time.

(ii) Liquidation

(A) *Liquidation Preference*. Upon any liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series A Convertible Preferred Stock shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and before any distribution or payment is made upon Common Stock, the sum of $1.3475 per share plus all declared and unpaid dividends due to the holders of the Series A Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series A Convertible Preferred Stock) for each share of Series A Convertible Preferred Stock then held by such stockholder (the "Series A Liquidation Amount"). The Corporation shall not pay the Series A Liquidation Amount or any portion thereof unless the Corporation has paid in full all preferential amounts payable upon shares of any class or series of Preferred Stock which expressly ranks senior to the Series A Convertible Preferred Stock in respect of payments on a Liquidation Event. If the assets to be distributed among the holders of Series A Convertible Preferred Stock upon a Liquidation Event are insufficient to permit payment of the entire Series A Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series A Convertible Preferred Stock. Upon any Liquidation Event and after the holders of Series A Convertible Preferred Stock have been paid the entire Series A Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed ratably among the holders of Common Stock.

(B) *Extraordinary Transactions*. None of the following shall be deemed to be a Liquidation Event for purposes, or within the meaning, of this Section 5(c)(ii);

(1) the consolidation or merger of the Corporation into or with one or more corporations or other entities (or the consolidation or merger of any such corporation or other entity with or into the Corporation);

(2) the sale, conveyance, lease, exchange or transfer (for cash, shares of stock, securities or ocher consideration) by the Corporation of all or substantially all of its assets;

(3) the purchase of any shares of the capital stock of the Corporation by any party or parties whether or not such purchase causes such third party or parties to own or control more than a majority of the voting capital stock of the Corporation; or

(4) the participation by the Corporation in a share exchange, share redemption, share repurchase or similar transaction.

(C) *Notice*. Prior to the occurrence of any Liquidation Event, the Corporation will furnish each holder of Series A Convertible Preferred Stock notice in accordance with Section 5(c)(iv) hereof, together with a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail the per share amount each holder of Series A Convertible Preferred Stock will receive pursuant to the provisions of Section 5(c)(ii)(A) hereof and stating in reasonable detail the facts upon which such amount was determined.

(iii) Conversion.

(A) *Optional Conversion*. Subject to the terms and conditions hereof, a holder of shares of Series A Convertible Preferred Stock may, at such holder's option and at any time, convert any shares of Series A Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from (i) multiplying the aggregate number of shares of Series A Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $1.3475 (the "Series A Purchase Price") by (2) the Series A Conversion Price (as defined in this Section 5(c)(iii)(A)) then in effect at the time of conversion. The "Series A Conversion Price" shall initially be $1.3475 subject to adjustment, from time to time, as provided in Section 5(c)(iii)(G). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series A Convertible Preferred Stock to convert any such shares of Series A Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of the Series A Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series A Liquidation Amount due such holder for each share of Series A Preferred Stock held by such holder, such holder's right to convert under this Section 5(c)(iii)(A) shall not be terminated with respect to that number of shares of Series A Convertible Preferred Stock equal to the amount of aggregate Series A Liquidation Amount not paid by the Corporation to the holder divided by the Series A Purchase Price.

(B) *Mandatory Conversion*. Upon the earlier of (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended (the "Securities Act") or any comparable statement under any similar United State federal statute then in force, which covers the offer and sale of Common Stock of the Corporation to the public (an "Initial Public Offering") or (ii) the affirmative vote of the holders of a majority of the then outstanding shares of Series A Convertible Preferred Stock to convert and notice thereof to the Corporation and the other holders of Series A Convertible

Preferred Stock (the "Series A Conversion Election Notice"), each share of Series A Convertible Preferred Stock shall automatically convert, without the payment of any additional consideration, into shares of Common Stock at the Series A Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 5(c)(iii)(A) hereof. The Corporation shall give the holders of Series A Convertible Preferred Stock notice of its intent to complete an Initial Public Offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(C) *Conversion Procedure*. A holder of shares of Series A Convertible Preferred Stock shall exercise the conversion rights contained in Section 5(c)(iii)(A) hereof by giving written notice that such holder elects to convert a stated number of shares of Series A Convertible Preferred Stock into Common Stock. Such a notice shall be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series A Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series A Convertible Preferred Stock shall be effective as of (i) the date the Corporation receives both such holder's written notice to convert and the certificate(s) for the share or shares of Series A Convertible Preferred Stock to be converted or (ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 5(c)(iii)(A) or 5(c)(iii)(B) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(D) *Issuance of Certificates*; *Time Conversion Effected*.

(1) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series A Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 5(c)(iii)(A) hereof, the written notice referred to in Section 5(c)(iii)(C), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series A Convertible Preferred Stock.

(2) A conversion of Series A Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 5(c)(iii)(A) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 5(c)(iii)(C) to convert and the certificate(s) for the share or shares of Series A Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of an automatic conversion pursuant to Section 5(c)(iii)(B) hereof, immediately prior to the closing of the Initial Public Offering, if applicable, or upon the date specified in the Series A Conversion Election Notice, if applicable. On and after the effective date of conversion, the person or persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 5(c)(iii)(C) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(E) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series A Convertible Preferred Stock into Common Stock and no payment or adjustment shalt be made upon any conversion on account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the sharps surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 5(c)(iii)(D) hereof. In case the number of shares of Series A Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 5(c)(iii)(D) hereof exceeds the number of shares converted, the Corporation shall, upon such conversion, execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or certificates for the number of shares of Series A Convertible Preferred Stock represented by the certificate or certificates surrendered which are not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section 5(c)(iii)(E), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series A Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors of the Corporation.

(F) *Reorganization, Reclassification, Consolidation, Merger or Sale*. Upon the occurrence of any of the following events (each an "Extraordinary Event"):

(1) any capital reorganization or reclassification of the capital stock of the Corporation; or

(2) any consolidation or merger of the Corporation with another corporation (with respect to which less than a majority of the outstanding voting power of such surviving corporation is held by the stockholders of the Corporation immediately prior to such consolidation or merger); or

(3) the sale of all or substantially all of the Corporation's assets to another corporation (including, without limitation, by way of consolidation or merger) that results in the holders of Common Stock being entitled to receive stock, securities, or assets with respect to or in exchange for Common Stock,

then, as a part and condition of such Extraordinary Event, lawful and adequate provisions (in form satisfactory to the holders of at least 50 percent of the outstanding shares of Series A Convertible Preferred Stock) shall be made so that the holders of the Series A Convertible Preferred Stock shall thereafter be entitled to receive upon conversion of the Series A Convertible Preferred Stock the number of shares of stock or other securities or property of the Corporation or of the successor corporation resulting from such Extraordinary Event, to which a holder of Common Stock deliverable upon conversion would have been entitled on such

Extraordinary Event. In any such case, appropriate provisions shall be made with respect to the rights of the holders of the Series A Convertible Preferred Stock after the Extraordinary Event to the end that the provisions of Section 5(c)(iii)(G) hereof (including, without limitation, provisions for adjustment of the Series A Conversion Price and the number of shares issuable upon conversion of the Series A Convertible Preferred Stock) shall thereafter be applicable, as nearly as may be, with respect to any shares of stock, securities or assets to be deliverable thereafter upon the conversion of the Series A Convertible Preferred Stock. The kind and amount of securities into which the Series A Convertible Preferred Stock shall be convertible after consummation of such transaction shall be subject to adjustment as described in Section 5(c)(iii)(G) following the date of consummation of such Extraordinary Event. The Corporation may not become a party to any Extraordinary Event unless the terms are consistent with the foregoing.

(G) *Conversion Adjustments*.

(1) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series A Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series A Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section (c)(iii)(G)(1) shall be given effect, upon payment of such a dividend or distribution, as of the record data for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(2) Sale of Common Stock. In the event the Corporation shall, at any time or from time to time, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding (i) any Common Stock which may be issued upon conversion of any Capital Stock or (ii) shares of Common Stock (or options to purchase shares of Common Stock) issued or to be issued to officers, directors, employees, consultants or agents of the Corporation under stock and option plans or arrangements approved by the Corporation's Board of Directors (collectively, the "Series A Excluded Shares")), for a consideration per share less than the Series A Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series A Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series A Convertible Preferred Stock shall promptly be reduced to an amount determined by multiplying such Series A Conversion Price by a fraction:

(I) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series A Conversion Price (prior to adjustment), and

(II) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion or exercise of any then outstanding Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(3) Sale of Options, Rights or Convertible Securities. In the event the Corporation shall at any time or from time to time, issue options, warrants or rights to subscribe for shares of Common Stock (other than any Series A Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series A Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series A Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series A Conversion Price by a fraction:

(I) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the “Net Aggregate Consideration”) would purchase at the Series A Conversion Price prior to adjustment, and

(II) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series A

Convertible Preferred Stock, options, warrants, nights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(4) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series A Excluded Shares) changes at any time, the Series A Conversion Price in effect at the time of such change shall be readjusted to the Series A Conversion Price which would have been in effect at such time had such options or convertible securities provided for such changed consideration per share (determined as provided in Section 5(c)(iii)(G)(3) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series A Conversion Price will be made only as and to the extent that the Series A Conversion Price effective upon such adjustment remains less than or equal to the Series A Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series A Conversion Price shall be made under this Section 5(c)(iii)(G) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series A Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which gave rise to such adjustment expire or are canceled without having been exercised, so that the Series A Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series A Conversion Price in affect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series A Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(5) Discretionary Adjustments. The Corporation shall also be entitled to make upward adjustments in the Series A Conversion Price as it in its discretion shall determine to be advisable, so that any stock dividends, subdivisions of shares, distribution of rights to purchase stock or securities, or distribution of securities convertible into or exchangeable for stock (or any transaction which could be treated as any of the foregoing transactions pursuant to Section 305 of the Internal Revenue Code of 1986, as amended) hereafter made by the Corporation to its stockholders shall not be taxable to such stockholders.

(6) Limitations on Adjustments. No adjustment in the Series A Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 5(c)(iii)(G)(6) are not required to be made shall be carried forward and taken into account in any subsequent adjustments.

(7) Computation of Adjustments; Notice. Whenever the Series A Conversion Price is adjusted as herein provided, the Corporation shall:

(I) promptly compute the adjusted Series A Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series A Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(II) mail a notice to the holders of the outstanding shares of the Series A Convertible Preferred Stock stating that the Series A Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series A Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

(iv) Other Notices. If an Extraordinary Transaction or a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier service, in each case, postage prepaid, or by personal delivery, addressed to each holder of any shares of Series A Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, (a) at least 30 days prior written notice of the date on which the books of the Corporation shall close or a record shall be taken for such dividend, distribution or subscription or subscription rights or for determining rights to vote in respect of any such Extraordinary Transaction or Liquidation Event, and (b) in the case of any such Extraordinary Transaction or a Liquidation Event, at least 30 days prior written notice of the date when the same shall take place. Such notice in accordance with the foregoing clause (a) shall also specify, in the case of any such dividend, distribution or subscription rights, the date on which the holders of Common Stock shall be entitled thereto, and such notice in accordance with the foregoing clause (b) shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Extraordinary Transaction or a Liquidation event, as the case may be; provided, however, that in the event of an increase in the Series A Conversion Price resulting from any distribution, subscription rights or dividend declared by the Corporation, each holder of Series A Convertible Preferred Stock shall have the option to receive either the distribution, subscription rights or dividend or a decrease in the Series A Conversion Price. In no such event shall such holder receive any distribution, subscription rights or dividend and the decrease in the Series A Conversion Price. In its notice to stockholders pursuant to this Section 5(c)(iv), the Corporation shall enclose a prepaid self-addressed envelope containing a form with which such stockholder may choose either the distribution, subscription rights or dividend or the decrease in the Series A Conversion Price. In the event said form is not returned to the Corporation by the stockholder in ten business days, said stockholder shall be deemed to have chosen to receive the distribution, subscription rights or declared dividend. The decrease in the

Series A Conversion Price shall be calculated by subtracting from the Series A Conversion Price then in effect an amount equal to the fair market value (as determined by the Board of Directors of the Corporation in good faith) of the distribution, subscription rights or declared dividend offered to each holder of Series A Convertible Preferred Stock as provided in this Section 5(c)(iv).

(v) Stock to be Reserved. The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series A Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series A Convertible Preferred Stock. The Corporation covenants that all shares of Common Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series A Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series A Conversion Price if the total number of shares of Common Stock issued and issuable after such action upon conversion of the Series A Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by this Corporation's Certificate of Incorporation.

(vi) No Reissuance of Series A Convertible Preferred Stock. Shares of Series A Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

(vii) Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series A Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series A Convertible Preferred Stock which is being converted.

(viii) Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series A Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series A Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series A Convertible Preferred Stock.

(ix) Voting. Except as otherwise required by law or the Corporation's Certificate of Incorporation, (a) the holders of Series A Convertible Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: (i) the holders of Series A Convertible Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Series A Convertible Preferred Stock are convertible on the record date for the vote and (ii) the holders of Common Stock shall have one vote per share of Common Stock, and (b) the holders of Preferred Stock and common Stock will vote as a single class on all matters.

(x) Definitions. As used in this Section 5(c), the following terms have the following meanings for purposes of this Section 5(c):

(A) "Business day" shall mean any clay other than a Saturday, Sunday, or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close or are closed because of a banking moratorium or otherwise.

(B) "Capital Stock" means any capital stock of any class or series (however designated) of the Corporation.

(C) "Common Stock" shall mean any stock of any class of the Corporation which has no preference in respect of dividends or of amounts payable in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation and which is not subject to redemption by the Corporation. However, shares of Common Stock issuable upon conversion of the Series A Convertible Preferred Stock, shall include only shares of the class designated as Common Stock as of the original date of issuance of the Series A Convertible Preferred Stock or shares of the Corporation of any class or classes resulting from any reclassification or reclassifications thereof and which have no preference in respect of dividends or of amounts payable in the event of any voluntary or involuntary dissolution or winding up of the Corporation and which are not subject to redemption by the Corporation; provided that if at any time there shall be more than one such resulting class, the shares of each such class then so issuable shall be substantially in the proportion which the total number of shares of such class resulting from such reclassification bears to the total number of all shares of all classes resulting from such reclassification.

ARTICLE 6
BUSINESS

The business and affairs of the Corporation shall be managed by the Board of Directors, and the directors need not be elected by ballot unless required by the Bylaws of the Corporation.

ARTICLE 7
INDEMNIFICATION

(a) The Corporation shall indemnify its directors and officers to the fullest extent authorized or permitted by law, as now or hereafter in effect, and such right to indemnification shall continue as to a person who has ceased to be a director or officer of the Corporation and

shall inure to the benefit of his or her heirs, executors and personal and legal representatives; provided, that except for proceedings to enforce rights to indemnification, the Corporation shall not be obligated to indemnify any director or officer (or his or her heirs, executors or personal or legal representatives) in connection with a proceeding (or part thereof) initiated by such person unless such proceeding (or part thereof) was authorized or consented to by the Board of Directors. The right to indemnification conferred by this Article 7 shall include the right to be paid by the Corporation for the expenses incurred in defending or otherwise participating in any proceeding in advance of its final disposition.

(b) The Corporation may, to the extent authorized from time to time by the Board of Directors, provide rights to indemnification and to the advancement of expenses to employees and agents of the Corporation similar to those conferred in this Article 7 to directors and officers of the Corporation.

(c) The rights to indemnification and to the advance of expenses conferred in this Article 7 shall not be exclusive of any other right which any person may have or hereafter acquire under this Certificate of Incorporation, the Bylaws of the Corporation, any statute, agreement, vote of stockholders or disinterested stockholders or otherwise.

(d) Any repeal or modification of this Article 7 shall not adversely affect any rights to indemnification and to the advancement of expenses of a director or officer of the Corporation existing at the time of such repeal or modification with respect to any acts or omissions occurring prior to such repeal or modification.

ARTICLE 8
STOCKHOLDER ACTION WITHOUT A MEETING

Any notion required or permitted to be taken at a meeting of the stockholders may be taken without a meeting if written consent setting forth the action so taken is signed by the requisite number of stockholders entitled to vote with respect to, and necessary to approve, the subject matter thereof except that, with respect to approval of a plan of merger or consolidation by written consent, information as required by the Delaware General Corporation Law must be delivered to the stockholders prior to their execution of the consent or the Consent must conspicuously and specifically state that waiver of the right to receive such information is expressly made. Such consent must be filed with the Corporation’s Secretary and will have the same force and effect as a unanimous vote of the stockholders.

ARTICLE 9
NO PERSONAL LIABILITY OF DIRECTORS AND OFFICERS

To the fullest extent permitted by Delaware law, a director or officer of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director or officer of the Corporation.

ARTICLE 10
BYLAWS

The Board of Directors is expressly authorized to adopt, amend or repeal the Bylaws of the Corporation.

ARTICLE 11
RESERVATION OF RIGHTS

The Corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation, in the manner now or hereafter prescribed by statute, and all rights conferred upon stockholders herein are granted subject to this reservation.

* * * * *

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 18 day of November 2002.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer, President
Title: President

Exhibit 3.4

Certificate of Amendment
of the
Certificate of Incorporation
of
Vaccinex, Inc.

Vaccinex, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify that:

FIRST: The name of the Corporation is Vaccinex, Inc.

SECOND: The Certificate of Incorporation of the Corporation was filed by the Department of State on April 6, 2001. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on May 14, 2001. A Restated Certificate of Incorporation was filed by the Department of State on November 21, 2002. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on August 31, 2007. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on April 9, 2010. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on July 15, 2016.

THIRD: The Certificate of Incorporation is hereby amended by striking the first sentence of Article 5(a) in its entirety and inserting in lieu thereof the following:

"(a) Common Stock. The aggregate number of common shares (referred to in this Certificate as "Common Stock") which the Corporation has the authority to issue is one hundred sixty million (160,000,000), $0.0001 par value per share."

FOURTH: The Certificate of Incorporation is hereby further amended by striking the first sentence of Article 5(b) in its entirety and inserting in lieu thereof the following:

"(b) Preferred Stock. The aggregate number of preferred shares (referred to in this Certificate as "Preferred Stock") which the Corporation has the authority to issue is one hundred ten million (110,000,000), $0.001 par value per share."

FIFTH: This Amendment of the Certificate of Incorporation was duly adopted by the Board of Directors of the Corporation, declaring its advisability, at a meeting duly called on May 2, 2017, followed by the written consent of the holders of a majority of all of the outstanding stock entitled to vote thereon.

SIXTH: This Amendment of the Certificate of Incorporation was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

(remainder of page intentionally left blank)

In Witness Whereof, the undersigned authorized officer executes this Certificate on behalf of Vaccinex, Inc. this 22 day of May, 2017 and hereby affirms the truth of the statements contained herein under penalty of perjury.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

Exhibit 3.5

Certificate of Amendment
of the
Certificate of Incorporation
of
Vaccinex, Inc.

Vaccinex, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify that:

FIRST: The name of the Corporation is Vaccinex, Inc.

SECOND: The Certificate of Incorporation of the Corporation was filed by the Department of State on April 6, 2001. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on May 14, 2001. A Restated Certificate of Incorporation was filed by the Department of State on November 21, 2002. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on August 31, 2007. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on April 9, 2010.

THIRD: The Certificate of Incorporation is hereby amended by striking the first sentence of Article 5(a) in its entirety and inserting in lieu thereof the following:

"(a) Common Stock. The aggregate number of common shares (referred to in this Certificate as "Common Stock") which the Corporation has the authority to issue is one hundred fifty million (150,000,000), $0.0001 par value per share."

FOURTH: The Certificate of Incorporation is hereby further amended by striking the first sentence of Article 5(b) in its entirety and inserting in lieu thereof the following:

"(b) Preferred Stock. The aggregate number of preferred shares (referred to in this Certificate as "Preferred Stock") which the Corporation has the authority to issue is one hundred million (100,000,000), $0.001 par value per share."

FIFTH: This Amendment of the Certificate of Incorporation was duly adopted by the Board of Directors of the Corporation, declaring its advisability, at a meeting duly called on July 11, 2016, followed by the written consent of the holders of a majority of all of the outstanding stock entitled to vote thereon.

SIXTH: This Amendment of the Certificate of Incorporation was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

(remainder of page intentionally left blank)

In Witness Whereof, the undersigned authorized officer executes this Certificate on behalf of Vaccinex, Inc. this 14 day of July, 2016 and hereby affirms the truth of the statements contained herein under penalty of perjury.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

Exhibit 3.6

Certificate of Amendment
of the
Certificate of Incorporation
of
Vaccinex, Inc.

Vaccinex, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify that:

FIRST: The name of the Corporation is Vaccinex, Inc.

SECOND: The Certificate of Incorporation of the Corporation was filed by the Department of State on April 6, 2001. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on May 14, 2001. A Restated Certificate of Incorporation was filed by the Department of State on November 21, 2002. A Certificate of Amendment of the Certificate of Incorporation was filed by the Department of State on August 31, 2007.

THIRD: The Certificate of Incorporation is hereby amended by striking the first sentence of Article V(a) in its entirety and inserting in lieu thereof the following:

"(a) Common Stock. The aggregate number of common shares (referred to in this Certificate as "Common Stock") which the Corporation has the authority to issue is seventy-five million (75,000,000), $0.0001 par value per share."

FOURTH: The Certificate of Incorporation is hereby further amended by striking the first sentence of Article V(b) in its entirety and inserting in lieu thereof the following:

"(b) Preferred Stock. The aggregate number of preferred shares (referred to in this Certificate as "Preferred Stock") which the Corporation has the authority to issue is fifty million (50,000,000), $0.001 par value per share."

FIFTH: This Amendment of the Certificate of Incorporation was duly adopted by the Board of Directors of the Corporation, declaring its advisability, by unanimous written consent dated March 31, 2010, followed by the written consent of the holders of a majority of all of the outstanding stock entitled to vote thereon.

SIXTH: This Amendment of the Certificate of Incorporation was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

(remainder of page intentionally left blank)

In Witness Whereof, the undersigned authorized officer executes this Certificate on behalf of Vaccinex, Inc. this 31st day of March, 2010 and hereby affirms the truth of the statements contained herein under penalty of perjury.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

Exhibit 3.7

Certificate of Amendment
of the
Certificate of Incorporation
of
Vaccinex, Inc.

Vaccinex, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, DOES HEREBY CERTIFY THAT:

FIRST: The name of the Corporation is Vaccinex, Inc.

SECOND: The Certificate of Incorporation of the Corporation was filed by the Department of State on April 6, 2001. A Certificate of Amendment to the Certificate of Incorporation was filed by the Department of State on May 14, 2001. A Restated Certificate of Incorporation was filed by the Department of State on November 21, 2002.

THIRD: The Certificate of Incorporation is hereby amended by striking the first sentence of Article V(a) in its entirety and inserting in lieu thereof the following:

"(a) Common Stock. The aggregate number of common shares (referred to in this Certificate as "Common Stock") which the Corporation has the authority to issue is fifty million (50,000,000), $0.0001 par value per share,"

FOURTH: The Certificate of Incorporation is hereby further amended by striking the first sentence of Article V(b) in its entirety and inserting in lieu thereof the following:

"(b) Preferred Stock. The aggregate number of preferred shares (referred to in this Certificate as "Preferred Stock") which the Corporation has the authority to issue is thirty million (30,000,000), $0,001 par value per share."

FIFTH: This Amendment of the Certificate of Incorporation was duly adopted by the Board of Directors of the Corporation, declaring its advisability, by unanimous written consent dated August 16, 2007, followed by the written consent of the holders of a majority of all the outstanding stock entitled to vote thereon.

SIXTH: This Amendment of the Certificate of Incorporation was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

(remainder of page intentionally left blank)

In Witness Whereof, the undersigned authorized officer executes this Certificate on behalf of Vaccinex, Inc. this 30th day of August, 2007 and hereby affirms the truth of the statements contained herein under penalty of perjury.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

Exhibit 3.8

VACCINEX, INC.

AMENDED AND RESTATED
SERIES B PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that pursuant to the authority vested in the Board of Directors of the Corporation by its Certificate of Incorporation. as amended, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolution which remains in mill force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, (hereinafter referred to as the "Certificate of Incorporation"), the Board of Directors does hereby create, authorize and provide for the issuance of Series B Convertible Preferred Stock, par value $0.001 per share, consisting of 2,791,000 shares, having the following designations, preferences and relative and other special rights, qualifications, limitations and restrictions:

1. Designation of Series. Two million seven hundred ninety-one thousand (2,791,000) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B Convertible Preferred Stock" (hereinafter referred to as "Series B Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms used herein are defined in Section 11 below.

2. Dividends.

(a) The holders of the Series B Convertible Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors, out of any funds legally available therefor and prior and in preference to any dividends being declared or paid on Series A Convertible Preferred Stock or Common Stock, preferential dividends in cash at the rate of eight percent per share per annum of the stated value thereof. For such purpose, the "stated value" of each share of Series B Convertible Preferred Stock shall be $2.15 (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or similar event with respect to the Series B Convertible Preferred Stock). Such dividends shall be cumulative and shall accrue on each anniversary of the Original Issue

Date, whether or not earned (if declared and whether or not in any fiscal year there shall be net profits or surplus available for the payment of dividends in such fiscal year. The Corporation shall not declare or pay any dividends to the holders of Series A Convertible Preferred Stock or Common Stock unless and until the Corporation shall have paid the holders of Series B Convertible Preferred Stock dividends in accordance with this Section 2.

(b) At the time of conversion of any shares of Series B Convertible Preferred Stock pursuant to Section 4, any dividend accrued but not declared on such Series B Convertible Preferred Stock shall not be paid by the Corporation and shall be deemed forfeited as of the effective date of such conversion.

3. Liquidation

(a) *Liquidation Preference*. Upon any Sale of the Corporation (other than a Qualified Sale of the Corporation), liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series B Convertible Preferred Stock shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and before any distribution or payment is made upon any shares of the Series A Convertible Preferred Stock or upon any shares of Common Stock, the sum of $2.15 per share plus all accrued and unpaid dividends due to the holders of the Series B Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series B Convertible Preferred Stock) for each share of Series B Convertible Preferred Stock then held by such stockholder (the "Series B Liquidation Amount"), If the assets to be distributed among the holders of Series B Convertible Preferred Stock upon a liquidation Event are insufficient to permit payment of the entire Series B Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series B Convertible Preferred Stock. Upon any Liquidation Event and after the holders of Series B Convertible Preferred Stock have been paid the entire Series B Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed among the holders of Series A Convertible Preferred Stock (on an as-converted basis) and the holders of Common Stock in accordance with Section 5(c)(ii)(A) of the Certificate of Incorporation.

(b) *Sale of the Corporation as Liquidation Event*. Notwithstanding Section 3(a), a Sale of the Corporation shall not be deemed to be a Liquidation Event if the holders of at least fifty percent (50%) of the Series B Convertible Preferred Stock elect to waive the provisions of Section 3(a) with respect to such Sale of the Corporation.

(c) *Notice*. Prior to the occurrence of any Liquidation Event, the Corporation will furnish each holder of Series B Convertible Preferred Stock notice in accordance with Section 5 hereof, together with a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail the per share amount each holder of Series B Convertible Preferred Stock will receive pursuant to the provisions of Section 3(a) hereof and stating in reasonable detail the facts upon which such amount was determined.

4. Conversion.

(a) *Optional Conversion*. Subject to the terms and conditions hereof, a holder of shares of Series B Convertible Preferred Stock may, at such holder's option and at any time, convert any shares of Series B Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from (i) multiplying the aggregate number of shares of Series B Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $2.15 (the "Series B Purchase Price") by (2) the Series B Conversion Price (as defined in this Section 4(a)) then in effect at the time of conversion. The "Series B Conversion Price" shall be initially $1.31 subject to adjustment, from time to time, as provided in Section 4(f). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series B Convertible Preferred Stock to Convert any such shares of Series B Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of a Series B Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series B Liquidation Amount due such holder for each share of Series B Preferred Stock held by such holder, such holder's right to convert under this Section 4(a) shall not be terminated with respect to that number of shares of Series B Convertible Preferred Stock equal to the amount of the aggregate Series B Liquidation Amount not paid by the Corporation to the holder divided by the Series B Purchase Price.

(b) *Mandatory Conversion*. Upon the earlier of (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act, or any comparable statement under• any similar United States federal statute then in force, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share of not less than two times the then applicable Series B Conversion Price and with gross proceeds to the Corporation of not less than $15,000,000 (a "Qualified Public Offering"), (ii) a Qualified Sale of the Corporation or (iii) the affirmative vote of the holders of a majority of the then outstanding shares of Series B Convertible Preferred Stock to convert and notice thereof to the Corporation and the other holders of Series B Convertible Preferred Stock (the "Series B Conversion Election Notice"), each share of Series B Convertible Preferred Stock shall automatically convert, without the payment of any additional consideration, into shares of Common Stock at the Series B Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 4(a) hereof. The Corporation shall give the holders of Series B Convertible Preferred Stock notice of its intent to complete an underwritten public offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(c) *Conversion Procedure*. A holder of shares of Series B Convertible Preferred Stock shall exercise the conversion rights contained in Section 4(a) hereof by giving written notice of the date upon which such holder elects to convert a stated number of shares of Series B Convertible Preferred Stock into Common Stock Such a notice shall be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series B Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series B Convertible Preferred Stock shall be effective as of (i) the date the Corporation receives both such holder's written notice to convert and the certificate(s) for the share or shares of Series B Convertible Preferred Stock to be converted or

(ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 4(a) or 4(b) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(d) *Issuance of Certificates; Time Conversion Effected.*

(i) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series B Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 4(a) hereof, the written notice referred to in Section 4(c), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series B Convertible Preferred Stock.

(ii) A conversion of Series B Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 4(a) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 4(c) and the certificate(s) for the share or shares of Series B Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of an automatic conversion pursuant to Section 4(b) hereof, immediately prior to the closing of the Qualified Public Offering or a Qualified Sale of the Corporation, if and as applicable, or upon the date specified in the Series B Conversion Election Notice, if and as applicable. On and after the effective date of conversion, the person or persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 4(c) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(e) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series B Convertible Preferred Stock into Common Stock and no payment or adjustment shall be made upon any conversion OR account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the shares surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 4(d) hereof. In case the number of shares of Series B Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 4(d) hereof exceeds the number of shares converted, the Corporation shall, upon such conversion, execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or certificates for the number of shares of Series B Convertible Preferred Stock represented by the certificate or certificates surrendered which arc not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section 4(e), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series B Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors of the Corporation.

(f) *Conversion Adjustments*.

(i) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock (other than any Series B Excluded Shares) as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series B Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series B Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section 4(f)(i) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(ii) Sale of Common Stock.

(1) In the event the Corporation shall issue, sell or exchange, after the Original Issue Date, any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B Excluded Shares), for a consideration per share less than the Series B Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series B Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B Convertible Preferred Stock shall promptly be reduced to an amount determined by multiplying such Series B Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series B Conversion Price (prior to adjustment), and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion o!- exercise of any then outstanding Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B Excluded Shares), for a consideration per share less than the Series B Conversion Price in effect immediately prior to the issuance, sale or exchange of such

shares, then, and thereafter successively upon each such issuance, sale or exchange during the Reference Period, the Series B Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B Convertible Preferred Stock shall promptly be reduced to an amount equal to the consideration per share in such issuance, sale or exchange.

(iii) Sale of Options, Rights or Convertible Securities.

(1) In the event the Corporation shall issue, after the Original Issue Date, options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly, for a consideration per share (determined by dividing die Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series B Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series B Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the "Net Aggregate Consideration") would purchase at the Series B Conversion Price prior to adjustment, and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined above) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or

exchangeable securities, the Series B Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount equal to the consideration per share in such issuance.

(iv) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series B Excluded Shares) changes at any time, the Series B Conversion Price in effect at the time of such change shall be readjusted to the Series B Conversion Price which would have been in effect at such time bad such options or convertible securities provided for such changed consideration per share (determined as provided in Section 4(f)(iii) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series B Conversion Price will be made only as and to the extent that the Series B Conversion Price effective upon such adjustment remains less than or equal to the Series B Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series B Conversion Price shall be made under this Section 4(t) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights or pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series B Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which gave rise to such adjustment expire or are canceled without having been exercised, so that the Series B Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series B Conversion Price in effect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series B Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(v) Discretionary Adjustments. The Corporation shall also be entitled to make upward adjustments in the Series B Conversion Price as it in its discretion shall determine to be advisable, so that any stock dividends, subdivisions of shares, distribution of rights to purchase stock or securities, or distribution of securities convertible into or exchangeable for stock (or any transaction which could be treated as any of the foregoing transactions pursuant to Section 305 of the Interns:1 Revenue Code of 1986, as amended) hereafter made by the Corporation to its stockholders shall not be taxable to such stockholders.

(vi) Limitations on Adjustments. No adjustment in the Series B Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 4(f)(vi) are not required to be made shall be carried forward and taken into account in any subsequent adjustments

(vii) Computation of Adjustments; Notice. Whenever the Series B Conversion Price is adjusted as herein provided, the Corporation shall:

(1) promptly compute the adjusted Series B Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series B Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(2) mail a notice to the holders of the outstanding shares of the Series B Convertible Preferred Stock stating that the Series B Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series B Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

5. Other Notices. If an Extraordinary Transaction or a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier service, in each case, postage prepaid, or by personal delivery, addressed to each holder of any shares of Series B Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, (a) at least 30 days prior written notice of the dare on which the books of the Corporation shall close or a record shall be taken for such dividend, distribution or subscription rights or for determining rights to vote in respect of any such Extraordinary Transaction or a liquidation Event, and (b) in the case of any such Extraordinary Transaction or a Liquidation Event, at least 30 days prior written notice of the date when the same shall take place. Such notice in accordance with the foregoing clause (a) shall also specify, in the case of any such dividend, distribution or subscription rights, the date on which the holders of Common Stock shall be entitled thereto, and such notice in accordance with the foregoing clause (b) shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Extraordinary Transaction or a Liquidation Event, as the case may be; provided, however, that in the event of an increase in the Series B Conversion Price resulting from any distribution, subscription rights or dividend declared by the Corporation, each holder of Series B Convertible Preferred Stock shall have the option to receive either the distribution, subscription rights or dividend or a decrease in the Series B Conversion Price. In no such event shall such holder receive a distribution, subscription rights or dividend and the decrease in the Series B Conversion Price. In its notice to stockholders pursuant to this Section 5, the Corporation shall enclose a prepaid self-addressed envelope containing a form with which such stockholder may choose either the distribution, subscription rights or dividend or the decrease in Series B Conversion Price. In the event said form is not returned to the Corporation by the stockholder in ten business days, said stockholder shall be deemed to have chosen to receive the distribution, subscription rights or declared dividend. The decrease in the Series B Conversion Price shall be calculated by subtracting from the Series B Conversion Price then in effect an amount equal to the fair market value (as determined by the Board of Directors of the Corporation in good faith) of the distribution, subscription rights or declared dividend offered to each holder of Series B Convertible Preferred Stock as provided in this Section 5.

6. Stock to be Reserved, The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series B Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series B Convertible Preferred Stock. The Corporation covenants that all shares of Common

Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series B Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series B Conversion Price if the total number of shares of Common Stock issued and issuable after such action upon conversion of the Series B Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by this Corporation's Certificate of Incorporation.

7. No Reissuance of Series B Convertible Preferred Stock. Shares of Series B Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

8. Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series B Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series B Convertible Preferred Stock which is being converted.

9. Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series B Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series B Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series B Convertible Preferred Stock.

10. Voting. Except as otherwise required by law or the Corporation's Certificate of Incorporation, (a) the holders of Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: co the holders of Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Preferred Stock are convertible on the record date for the vote and (ii) the holders of Common Stock shall have one vote per share of Common Stock and (b) the holders of the Preferred Stock and the holders of Common Stock will vote as a single class on all matters.

11. Definitions. As used in this Certificate of Designation, the following terms have the following meanings for purposes of this Certificate of Designation:

(a) "Capital Stock" means any capital stock of any class or series (however designated) of the Corporation.

(b) “Original Issue Date” means the date that the first share of the Series B Convertible Preferred Stock is issued by the Corporation.

(c) “Person” means an individual, partnership, corporation, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

(d) “Qualified Sale of the Corporation” means any Sale of the Corporation whereby each share of Common Stock then issued and outstanding (including for such purposes, all shares of Common Stock ‘hen issuable upon the conversion of the Series A Convertible Preferred Stock, the Series B Convertible Preferred Stock and any other class or series of Preferred Stock then issued and outstanding and all shares of Common Stock then issuable upon the conversion or exchange of any options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock directly or indirectly) is entitled to receive gross proceeds from such transaction, on a per share basis, having a fair market value (as determined by the Board of Directors of the Corporation in good faith) of not less than two times the then applicable Series B Conversion Price.

(e) “Reference Period” means the period beginning on the Original Issue Date and terminating upon the earlier to occur of (i) the date of the consummation of the issuance and sale of shares of the Corporation’s Capital Stock or options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly, for the account of the Corporation with aggregate gross proceeds to the Corporation of $3,000,000 or more from the Original Issue date until such date or (ii) the first anniversary of the Original Issue Date.

(f) “Sale of the Corporation” means: (a) a merger or consolidation of the Corporation into or with any other Person at Persons who are not affiliates of the Corporation in which the stockholders of the Corporation immediately prior to such merger or consolidation possess less than a majority of the Corporation’s or the surviving entity’s issued and outstanding voting Capital Stock immediately after such merger or consolidation: (b) a single transaction or a series of transactions pursuant to which at least a majority of the issued and outstanding voting Capital Stock of the Corporation is acquired by a Person or group of affiliated Persons who did not hold (and whose affiliates did not hold) any of the issued and outstanding voting Capital Stock of the Corporation as of the Original Issue Date; or (c) a single transaction or series of transactions pursuant to which a Person or Persons who are not affiliates of the Corporation acquire all or substantially all of the assets of the Corporation. Notwithstanding the foregoing, any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force having such an effect and any issuance of Capital Stock by the Corporation in a bona fide capital raising transaction having such an effect shall not be a “Sale of the Corporation” hereunder.

(g) “Series B Excluded Shares” means any (i) Capital Stock offered in any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force; (ii) Capital Stock issued pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the

purchase of substantially all of the assets or otherwise; (iii) Capital Stock issued pursuant to a joint venture or strategic silence by the Corporation with another Person; (iv) Capital Stock or warrants or options to acquire Capital Stock issued to Persons as partial consideration for debt financing or lease financing; (v) shares of Common Stock, issued or issuable to any Person as an employee, director or officer of, or consultant or service provider to, the Corporation pursuant to a stock purchase or stock option plan or other employee stock arrangement of the Corporation and any shares of Common Stock issued upon the exercise thereof: (vi) Capital Stock issued to the Corporation's stockholders pro rata in connection with any stock split, stock dividend or recapitalization by the Corporation; (vii) Capital Stock issued pursuant to the exercise or conversion of options, warrants or rights to subscribe for shares of the Corporation's Capital Stock, directly or indirectly, outstanding as of the date hereof; (viii) shares of the Corporation's Capital Stock or options, wit-rants or rights to subscribe for shares of the Corporation's Capital Stock, directly or indirectly approved for issuance by the holders of a majority of the then outstanding shares of Series A Convertible Preferred Stock and the holders of a majority of the then outstanding shares of Series B Convertible Preferred Stock, each voting separately as a single class, (ix) securities, issued in replacement of any securities issued pursuant to the preceding subsections (i) - (viii), or (x) shares of Common Stock issued upon conversion or exchange of any Capital Stock.

All capitalized terms used and not defined herein shall have the meanings given to them the Certificate of Designation of Series A Convertible Preferred Stock of Vaccinex, Inc.

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IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 5th day of January, 2004.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President

VACCINEX, INC.

AMENDMENT TO
AMENDED AND RESTATED
SERIES B PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolutions which remain in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors by its Certificate of Incorporation, as amended and restated, the Board of Directors does hereby increase the number of authorized shares of Series B Convertible Preferred Stock, par value $0.001 per share, from 2,791,000 shares to 3,600,000 shares, having the designations, preferences and relative and other special rights, qualifications, limitations and restrictions as set forth in the Amended and Restated Series B Preferred Stock Certificate of Designation dated January 5, 2004 (the "Certificate of Designation").

RESOLVED, that Paragraph 1. of the Certificate of Designation shall hereby be amended and restated to read in its entirety as follows:

"1. Designation of Series. Three Million Six Hundred Thousand (3,600,000) shares of the Corporation's authorized Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B Convertible Preferred Stock" (hereinafter referred to as "Series B Convertible Preferred Stock'), which shall have the voting powers, limitations, rights and preferences as set forth herein. Certain capitalized terms used herein are defined in Section 11 below."

RESOLVED, that all other paragraphs of the Certificate of Designation shall remain in full force and effect.

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[signature page]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, as of this 18th day of February, 2005.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President

Exhibit 3.10

VACCINEX, INC.

SECOND AMENDMENT TO
AMENDED AND RESTATED
SERIES B PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolutions which remain in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors by its Certificate of Incorporation, as amended and restated, the Board of Directors does hereby increase the number of authorized shares of Series B Convertible Preferred Stock, par value $0.001 per share, from 3,600,000 shares to 6,500,000 shares, having the designations, preferences and relative and other special rights, qualifications, limitations and restrictions as set forth in the Amended and Restated Series B Preferred Stock Certificate of Designation dated January 5, 2004 (the "Certificate of Designation").

RESOLVED, that Paragraph 1. of the Certificate of Designation shall hereby be amended and restated to read in its entirety as follows:

"1. Designation of Series. Six Million Five Hundred Thousand (6,500,000) shares of the Corporation's authorized Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B Convertible Preferred Stock" (hereinafter referred to as "Series B Convertible Preferred Stock'), which shall have the voting powers, limitations, rights and preferences as set forth herein. Certain capitalized terms used herein are defined in Section 11 below."

RESOLVED, that all other paragraphs of the Certificate of Designation shall remain in full force and effect.

[remainder of page intentionally left blank]

[signature page]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, as of this 29 day of November, 2006.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President

VACCINEX, INC.

SERIES B1 CONVERTIBLE PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that pursuant to the authority vested in the Board of Directors of the Corporation by its Certificate of Incorporation, as amended, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolution which remains in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, (hereinafter referred to as the "Certificate of Incorporation"), the Board of Directors does hereby create, authorize and provide for the issuance of Series B1 Convertible Preferred Stock, par value $0.001 per share, consisting of 3,350,000 shares, having the following designations, preferences and relative and other special rights, qualifications, limitations and restrictions:

1. Designation of Series. Three million three hundred and fifty thousand (3,350,000) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B1 Convertible Preferred Stock" (hereinafter referred to as "Series B1 Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms used herein are defined in Section 11 below.

2. Dividends.

(a) The holders of the Series B1 Convertible Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors, out of any funds legally available therefor and prior and in preference to any dividends being declared or paid on Series A Convertible Preferred Stock or Common Stock and pari passu on a ratable basis with any dividends being declared or paid on Series B Convertible Preferred Stock, preferential dividends in cash at the rate of eight percent per share per annum of the stated value thereof. For such purpose, the "stated value" of each share of Series B1 Convertible Preferred Stock shall be $1.55 (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or similar event with respect to the Series B1 Convertible Preferred Stock). Such dividends shall be cumulative and shall accrue on each anniversary of the Original Issue Date, whether or not earned or declared and whether or

not in any fiscal year there shall be net profits or surplus available for the payment of dividends in such fiscal year. The Corporation shall not declare or pay any dividends to the holders of Series A Convertible Preferred Stock or Common Stock unless and until the Corporation shall have paid the holders of Series B1 Convertible Preferred Stock dividends in accordance with this Section 2.

(b) At the time of conversion of any shares of Series B1 Convertible Preferred Stock pursuant to Section 4, any dividend accrued but not declared on such Series B1 Convertible Preferred Stock shall not be paid by the Corporation and shall be deemed forfeited as of the effective date of such conversion.

3. Liquidation.

(a) *Liquidation Preference*. Upon any Sale of the Corporation (other than a Qualified Sale of the Corporation), liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series B1 Convertible Preferred Stock shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and before (i) any distribution or payment is made upon any shares of the Series A Convertible Preferred Stock or upon any shares of Common Stock and (ii) pari passu with any distribution or payment being declared or paid on Series B Convertible Preferred Stock, determined on a pro rata basis based on aggregate stated value, the sum of $1.55 per share plus all accrued and unpaid dividends due to the holders of the Series B1 Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series B1 Convertible Preferred Stock) for each share of Series B1 Convertible Preferred Stock then held by such stockholder (the "Series B1 Liquidation Amount"). If the assets to be distributed among the holders of Series B1 Convertible Preferred Stock upon a Liquidation Event are insufficient to permit payment of the entire Series B1 Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock and the holders of any other series of pari passu preferred stock of the Corporation. Upon any Liquidation Event and after the holders of Series B1 Convertible Preferred Stock have been paid the entire Series B1 Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed among the holders of Series A Convertible Preferred Stock (on an as-converted basis) and the holders of Common Stock in accordance with Section 5(c)(ii)(A) of the Certificate of Incorporation.

(b) *Sale of the Corporation not a Liquidation Event*. Notwithstanding Section 3(a), a Sale of the Corporation shall not be deemed to be a Liquidation Event if the holders of at least fifty percent (50%) of the Series B1 Convertible Preferred Stock elect to waive the provisions of Section 3(a) with respect to such Sale of the Corporation.

(c) *Notice*. Prior to the occurrence of any Liquidation Event, the Corporation will furnish each holder of Series B1 Convertible Preferred Stock notice in accordance with Section 5 hereof, together with a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail the per share amount each holder of Series BI Convertible Preferred Stock will receive pursuant to the provisions of Section 3(a) hereof and stating in reasonable detail the facts upon which such amount was determined.

4. Conversion.

(a) *Optional Conversion*. Subject to the terms and conditions hereof, a holder of shares of Series B1 Convertible Preferred Stock may, at such holders' option, at any time and from time to time convert some or all shares of Series B1 Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from (i) multiplying the aggregate number of shares of Series B1 Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $1.55 (the "Series B1 Purchase Price") by (2) the Series B1 Conversion Price (as defined in this Section 4(a)) then in effect at the time of conversion. The "Series B1 Conversion Price" shall be initially $1.55 subject to adjustment, from time to time, as provided in Section 4(f). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series B1 Convertible Preferred Stock to convert any such shares of Series B1 Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of a Series B1 Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series B1 Liquidation Amount due such holder for each share of Series B1 Preferred Stock held by such holder, such holder's right to convert under this Section 4(a) shall not be terminated with respect to that number of shares of Series B1 Convertible Preferred Stock equal to the amount of the aggregate Series B1 Liquidation Amount not paid by the Corporation to the holder divided by the Series B1 Purchase Price.

(b) *Mandatory Conversion*. Upon the earlier of (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share of not less than two times the then applicable Series B1 Conversion Price and with gross proceeds to the Corporation of not less than $15,000,000 (a "Qualified Public Offering"), (ii) a Qualified Sale of the Corporation, (iii) the affirmative vote of the holders of a majority of the then outstanding shares of Series B1 Convertible Preferred Stock to convert and notice thereof to the Corporation and other holders of Series B1 Convertible Preferred Stock (the "Series B1 Conversion Election Notice"), or (iv) the affirmative, vote of two-thirds of the holders of then outstanding shares of Series B1 Convertible Preferred Stock and Series B Convertible Preferred Stock to convert, voting together as a single class on an as converted basis and notice thereof to the Corporation and other holders of Series B1 Convertible Preferred Stock and of Series B Convertible Preferred Stock, each share of Series B1 Convertible Preferred Stock shall automatically convert, without the payment of any additional consideration, into shares of Common Stock at the Series B1 Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 4(a) hereof. The Corporation shall give the holders of Series B1 Convertible Preferred Stock notice of its intent to complete Qualified Public Offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(c) *Conversion Procedure*. A holder of shares of Series B1 Convertible Preferred Stock shall exercise the conversion rights contained in Section 4(a) hereof by giving written notice of the date upon which such holder elects to convert a stated number of shares of Series B1 Convertible Preferred Stock into Common Stock. Such a notice shall be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series B1 Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series B1 Convertible Preferred Stock shall be effective as of (i) the date the Corporation received both such holder's written notice to convert and the certificate(s) for the share or shares of Series B1 Convertible Preferred Stock to be converted or (ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 4(a) or 4(b) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(d) *Issuance of Certificates; Time Conversion Effected*.

(i) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series B1 Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 4(a) hereof, the written notice referred to in Section 4(c), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series B1 Convertible Preferred Stock.

(ii) A conversion of Series B1 Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 4(a) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 4(c) and the certificate(s) for the share or shares of Series B1 Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of an automatic conversion pursuant to Section 4(b) hereof, immediately prior to the closing of the Qualified Public Offering or a Qualified Sale of the Corporation, if and as applicable, or upon the date specified in the Series B1 Conversion Election Notice, if and as applicable. On and after the effective date of conversion, the person or persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 4(c) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(e) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series B1 Convertible Preferred Stock into Common Stock and no payment or adjustment shall be made upon any conversion on account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the shares surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 4(d) hereof. In case the number of shares of Series B1 Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 4(d) hereof exceeds the number of shares converted, the Corporation shall, upon such conversion, execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or

certificates for the number of shares of Series B1 Convertible Preferred Stock represented by the certificate or certificates surrendered which are not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section 4(e), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series B1 Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors of the Corporation.

(f) *Conversion Adjustments*.

(i) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock (other than any Series B1 Excluded Shares) as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series B1 Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series B1 Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section 4(f)(i) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(ii) Sale of Common Stock.

(1) In the event the Corporation shall issue, sell or exchange, after the First Issue Date, any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B I Excluded Shares), for a consideration per share less than the Series B1 Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series B1 Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B1 Convertible Preferred Stock shall promptly be reduced to an amount determined by multiplying such Series B1 Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series B1 Conversion Price (prior to adjustment), and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion or exercise of any then outstanding Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B1 Excluded Shares), for a consideration per share less than the Series B1 Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange during the Reference Period, the Series B1 Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B Convertible Preferred stock shall promptly be reduced to an amount equal to the consideration per share in such issuance, sale or exchange.

(iii) Sale of Options, Rights or Convertible Securities.

(1) In the event the Corporation shall issue, after the First issue date, options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B1 Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock (other than any Series B1 Excluded Shares), directly or indirectly, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B1 Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series B1 Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series B1 Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, right or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the "Net Aggregate Consideration") would purchase at the Series B1 Conversion Price prior to adjustment, and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such

options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B1 Convertible Common Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B1 Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly (other than any Series B1 Excluded Shares), for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined above) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible or exchangeable securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B1 Conversion Price in effect immediately prior to the issuance of such securities, the Series B1 Conversion Price in effect immediately prior to the issuance of such options, warrants, rights or convertible or exchangeable securities shall be reduced to an amount equal to the consideration per share in such issuance.

(iv) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series B1 Excluded Shares) changes at any time, the Series B1 Conversion Price in effect at the time of such change shall be readjusted to the Series B1 Conversion Price which would have been in effect at such time had such options or convertible securities provided for such changed consideration per share (determined as provided in Section 4(f)(iii) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series B1 Conversion Price will be made only as and to the extent that the Series B1 Conversion Price effective upon such adjustment remains less than or equal to the Series B1 Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series B1 Conversion Price shall be made under this Section 4(f) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights or pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series B1 Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which give rise to such adjustment expire or are canceled without having been exercised, so that the Series B1 Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series B1 Conversion Price in effect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series B1 Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(v) Discretionary Adjustments. The Corporation shall also be entitled to make upward adjustments in the Series B1 Conversion Price as it in its discretion shall

determine to be advisable, so that any stock dividends, subdivisions of shares, distribution of rights to purchase stock or securities, or distribution of securities convertible into or exchangeable for stock (or any transaction which could be treated as any of the foregoing transactions pursuant to Section 305 of the Internal Revenue Code of 1986, as amended) hereafter made by the Corporation to its stockholders shall not be taxable to such stockholders.

(vi) Limitations on Adjustments. No adjustment in the Series B1 Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 4(f)(vi) are not required to be made shall be carried forward and taken into account in any subsequent adjustments. Any adjustment in the Series B1 Conversion Price shall apply, upon issuance, to shares of Series B1 Preferred Stock which have been authorized but not issued.

(vii) Computation of Adjustments; Notice. Whenever the Series B1 Conversion Price is adjusted as herein provided, the Corporation shall:

(1) promptly compute the adjusted Series B1 Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series B1 Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(2) mail a notice to the holders of the outstanding shares of the Series B1 Convertible Preferred Stock stating that the Series B1 Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series B1 Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

5. Other Notices. If an Extraordinary Transaction or a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier service, in each case, postage prepaid, or by personal delivery, addressed to each holder of any shares of Series B1 Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, (a) at least 30 days prior written notice of the date on which the books of the Corporation shall close or a record shall be taken for such dividend, distribution or subscription rights or for determining tights to vote in respect of any such Extraordinary Transaction or a Liquidation event, and (b) in the case of any such Extraordinary Transaction or a Liquidation Event, at least 30 days prior written notice of the date when the same shall take place. Such notice in accordance with the foregoing clause (a) shall also specify, in the case of any such dividend, distribution or subscription rights, the date on which the holders of Common Stock shall be entitled thereto, and such notice in accordance with the foregoing clause (b) shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Extraordinary Transaction or a Liquidation Event, as the case may be; provided, however, that in the event of an increase in the Series B1 Conversion Price resulting from any distribution, subscription rights or dividend declared by the Corporation, each holder of Series B1 Convertible Preferred Stock shall have the option to receive either the distribution,

subscription rights or dividend or a decrease in the Series B1 Conversion Price. In no such event shall such holder receive a distribution, subscription rights or dividend and the decrease in the Series B1 Conversion Price. In its notice to stockholders pursuant to this Section 5, the Corporation shall enclose a prepaid self-addressed envelope containing a form with which such stockholder may choose either the distribution, subscription rights or dividend or the decrease in Series B1 Conversion Price. In the event said form is not returned to the Corporation by the stockholder in ten business days, said stockholder shall be deemed to have chosen to receive the distribution, subscription rights or declared dividend. The decrease in the Series B1 Conversion Price shall be calculated by subtracting from the Series B1 Conversion Price then in effect an amount equal to the fair market value (as determined by the Board of Directors of the Corporation in good faith) of the distribution, subscription rights or declared dividend offered to each holder of Series B1 Convertible Preferred Stock as provided in this Section 5.

6. Stock to be Reserved. The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series B1 Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series B1 Convertible Preferred Stock. The Corporation covenants that all shares of Common Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series B1 Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series B1 Conversion Price if the total number of shares of Common Stock issued and issuable after such action upon conversion of the Series B1 Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by the Corporation's Certificate of Incorporation.

7. No Reissuance of Series B1 Convertible Preferred Stock. Shares of Series B1 Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

8. Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series B1 Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series B1 Convertible Preferred Stock which is being converted.

9. Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series B1 Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series B1 Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series B1 Convertible Preferred Stock.

10. Voting. Except as otherwise required by law or the Corporation's Certificate of Incorporation, (a) the holders of Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: (i) the holders of Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Preferred Stock are convertible on the record date for the vote and (ii) the holders of Common Stock shall have one vote per share of Common Stock and (b) the holders of the Preferred Stock and the holders of Common Stock will vote as a single class on all matters. Notwithstanding anything contained in this Agreement, the terms of the Series B1 Convertible Preferred Stock may only be amended in a way that is materially adverse to the holders of the Series B1 Convertible Preferred Stock with the consent of at least 51% of the holders of Series B1 Convertible Preferred Stock that purchased shares of Series B1 Convertible Preferred on the First Issue Date.

11. Definitions. As used in this Certificate of Designation, the following terms have the following meanings for purposes of this Certificate of Designation:

(a) "Capital Stock" means any capital stock of any class or series (however designated) of the Corporation.

(b) "First Issue Date" means the earliest date on which shares of the Series B1 Convertible Preferred Stock are first issued by the Corporation.

(c) "Original Issue Date" means the date that the applicable shares of the Series B1 Convertible Preferred Stock are issued by the Corporation.

(d) "Person" means an individual, partnership, corporation, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

(e) "Qualified Sale of the Corporation" means any Sale of the Corporation whereby each share of Common Stock then issued and outstanding (including for such purposes, all shares of Common Stock then issuable upon the conversion of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock and any other class or series of Preferred Stock then issued and outstanding and all shares of Common Stock then issuable upon the conversion or exchange of any options, warrants or rights to subscribe for shares of the Corporation's Capital Stock directly or indirectly) is entitled to receive gross proceeds from such transaction, on a per share basis, having a fair market value (as determined by the Board of Directors of the Corporation in good faith) of not less than two times the then applicable Series B1 Conversion Price.

(f) "Reference Period" means the period beginning on the First Issue Date and terminating upon the earlier to occur of (i) the closing date of any Corporation financing round in which the Corporation issues shares of its preferred stock to investors and which results in gross proceeds to the Corporation of $4,000,000 or (ii) the eighteen month anniversary of the First Issue Date.

(g) “Sale of the Corporation” means: (a) a merger or consolidation of the Corporation into or with any other Person or Persons who are not affiliates of the Corporation in which the stockholders of the Corporation immediately prior to such merger or consolidation possess less than a majority of the Corporation’s or the surviving entity’s issued and outstanding voting Capital Stock immediately after such merger or consolidation; (b) a single transaction or a series of transactions pursuant to which at least a majority of the issued and outstanding voting Capital Stock of the Corporation is acquired by a Person or group of affiliated Persons who did not hold (and whose affiliates did not hold) any of the issued and outstanding voting Capital Stock of the Corporation as of the First Issue Date; or (c) a single transaction or series of transactions pursuant to which a Person or Persons who are not affiliates of the Corporation acquire all or substantially all of the assets of the Corporation. Notwithstanding the foregoing, any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force having such an effect and any issuance of Capital Stock by the Corporation in a bona fide capital raising transaction having such an effect shall not be a “Sale of the Corporation” hereunder.

(h) “Series B1 Excluded Shares” means any (i) Capital Stock offered in any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force; (ii) Capital Stock issued pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (iii) Capital Stock issued pursuant to a joint venture or strategic alliance by the Corporation with another Person; (iv) Capital Stock or warrants or options to acquire Capital Stock issued to Persons as partial consideration for debt financing or lease financing; (v) shares of Common Stock, issued or issuable to any Person as an employee, director or officer of, or consultant or service provider to, the Corporation pursuant to a stock purchase or stock option plan or other employee stock arrangement of the Corporation and any shares of Common Stock issued upon the exercise thereof; (vi) Capital Stock issued to the Corporation’s stockholders pro rata in connection with any stock split, stock dividend or recapitalization by the Corporation; (vii) Capital Stock issued pursuant to the exercise or conversion of options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly, outstanding as of the date hereof; (viii) shares of the Corporation’s Capital Stock or options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly approved for issuance by the holders of a majority of the then outstanding shares of Series A Convertible Preferred stock, the holders of a majority of the then outstanding shares of Series B Convertible Preferred Stock and the holders of a majority of the then outstanding shares of Series B1 Convertible Preferred Stock, *each* voting separately as a single class, (ix) securities issued in replacement of any securities issued pursuant to the preceding subsections (i) — (viii), (x) shares of Common Stock issued upon conversion or exchange of any Capital Stock, or (xi) the authorized but unissued shares of Series B1 Convertible Preferred Stock.

All capitalized terms used and not defined herein shall have the meanings given to them in the Amended and Restated Certificate of Incorporation of Vaccinex, Inc.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 5th day of November, 2004.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President

VACCINEX, INC.

CERTIFICATE OF AMENDMENT
TO SERIES B1 PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does certify that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolutions which remain in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors by its Certificate of Incorporation, as amended and restated, the Board of Directors does hereby increase the number of authorized shares of Series B1 Convertible Preferred Stock, par value $0.001 per share, from 3,350,000 shares to 6,417,000 shares, having the designations, preferences and relative and other special rights, qualifications, limitations and restrictions as set forth in the Series B1 Preferred Stock Certificate of Designation dated November 5, 2004 (the "Certificate of Designation").

RESOLVED, that Paragraph 1 of the Certificate of Designation shall hereby be amended and restated to read in its entirety as follows:

"1. Designation of Series. Six Million Four Hundred Seventeen Thousand (6,417,000) shares of the Corporation's authorized Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B1 Convertible Preferred Stock" (hereinafter referred to as "Series B1 Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences as set forth herein. Certain capitalized terms used herein are defined in Section 11 below."

RESOLVED, that all other paragraphs of the Certificate of Designation shall remain in full force and effect.

(remainder of page intentionally blank)

IN WITNESS WHEREOF, Vaccinex Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, as of this 30th day of August, 2007.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

(signature page to Amendment to Series B1 Certificate of Designation)

VACCINEX, INC.

SERIES B2 CONVERTIBLE PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that pursuant to the authority vested in the Board of Directors of the Corporation by its Certificate of Incorporation, as amended, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolution which remains in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors') by its Certificate of Incorporation, as amended and restated, (hereinafter referred to as the "Certificate of Incorporation"), the Board of Directors does hereby create, authorize and provide for the issuance of Series B2 Convertible Preferred Stock, par value $0.001 per share, consisting of five million five hundred thousand (5,500,000) shares, having the following designations, preferences and relative and other special rights, qualifications, limitations and restrictions:

1. Designation of Series. five million five hundred thousand (5,500,000) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B2 Convertible Preferred Stock" (hereinafter referred to as "Series B2 Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms used herein are defined in Section 11 below.

2. Dividends.

(a) The holders of the Series B2 Convertible Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors, out of any funds legally available therefor and prior and in preference to any dividends being declared or paid on Series A Convertible Preferred Stock or Common Stock and pari passu on a ratable basis with any dividends being declared or paid on Series B Convertible Preferred Stock or Series B1 Convertible Preferred Stock, preferential dividends in cash at the rate of eight percent per share per annum of the stated value thereof. For such purpose, the "stated value" of each share of Series B2 Convertible Preferred Stock shall be $3.10 (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or similar event with respect to the Series B2 Convertible Preferred Stock). Such dividends shall be cumulative and shall accrue on each anniversary of the Original Issue Date,

whether or not earned or declared and whether or not in any fiscal year there shall be net profits or surplus available for the payment of dividends in such fiscal year. The Corporation shall not declare or pay any dividends to the holders of Series A Convertible Preferred Stock or Common Stock unless and until the Corporation shall have paid the holders of Series B2 Convertible Preferred Stock dividends in accordance with this Section 2.

(b) At the time of conversion of any shares of Series B2 Convertible Preferred Stock pursuant to Section 4, any dividend accrued but not declared on such Series B2 Convertible Preferred Stock shall not be paid by the Corporation and shall be deemed forfeited *as* of the effective date of such conversion.

3. Liquidation.

(a) *Liquidation Preference*. Upon any Sale of the Corporation (other than a Qualified Sale of the Corporation), liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series B2 Convertible Preferred Stock shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and before (i) any distribution or payment is made upon any shares of the Series A Convertible Preferred Stock or upon any shares of Common Stock and (ii) pari passu with any distribution or payment being declared or paid on Series B Convertible Preferred Stock and Series B1 Convertible Preferred Stock, determined on a pro rata basis based on aggregate stated value, the sum of $3.10 per share plus all accrued and unpaid dividends due to the holders of the Series B2 Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series B2 Convertible Preferred Stock) for each share of Series B2 Convertible Preferred Stock then held by such stockholder (the "Series B2 Liquidation Amount"). If the assets to be distributed among the holders of Series B2 Convertible Preferred Stock upon a Liquidation Event are insufficient to permit payment of the entire Series B2 Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock and the holders of any other series of pari passu preferred stock of the Corporation. Upon any Liquidation Event and after the holders of Series B2 Convertible Preferred Stock and any pari passu preferred stock have been paid their entire Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed among the holders of Series A Convertible Preferred Stock (on an as-converted basis) and the holders of Common Stock in accordance with Section 5(c)(ii)(A) of the Certificate of Incorporation.

(b) *Sale of the Corporation not a Liquidation Event*. Notwithstanding Section 3(a), a Sale of the Corporation shall not be deemed to be a Liquidation Event if the holders of at least fifty percent (50%) of the Series B2 Convertible Preferred Stock elect to waive the provisions of Section 3(a) with respect to such Sale of the Corporation.

(c) *Notice*. Prior to the occurrence of any Liquidation Event, the Corporation will furnish each holder of Series B2 Convertible Preferred Stock notice in accordance with Section 5 hereof together with a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail

the per share amount each holder of Series B2 Convertible Preferred Stock will receive pursuant to the provisions of Section 3(a) hereof and stating in reasonable detail the facts upon which such amount was determined.

4. Conversion.

(a) *Optional Conversion*. Subject to the terms and conditions hereof, a holder of shares of Series B2 Convertible Preferred Stock may, at such holders' option, at any time and from time to time, convert some or all shares of Series B2 Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from (i) multiplying the aggregate number of shares of Series B2 Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $3.10 (the "Series B2 Purchase Price") by (2) the Series B2 Conversion Price (as defined in this Section 4(a)) then in effect at the time of conversion. The "Series B2 Conversion Price" shall be initially $3.10 subject to adjustment, from time to time, as provided in Section 4(f). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series B2 Convertible Preferred Stock to convert any such shares of Series B2 Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of a Series B2 Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series B2 Liquidation Amount due such holder for each share of Series B2 Preferred Stock held by such holder, such holder's right to convert under this Section 4(a) shall not be terminated with respect to that number of shares of Series B2 Convertible Preferred Stock equal to the amount of the aggregate Series B2 Liquidation Amount not paid by the Corporation to the holder divided by the Series B2 Purchase Price.

(b) *Mandatory Conversion*. Upon the earlier of (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share of not less than $5.00 and with gross proceeds to the Corporation of not less than $15,000,000 (a "Qualified Public Offering"), (ii) a Qualified Sale of the Corporation, (iii) the affirmative vote of the holders of a majority of the then outstanding shares of Series B2 Convertible Preferred Stock to convert and notice thereof to the Corporation and other holders of Series B2 Convertible Preferred Stock (the "Series B2 Conversion Election Notice"), or (iv) the affirmative vote of two-thirds of the holders of the then outstanding shares of the Corporation's Preferred Stock, voting together as a single class on an as converted basis, each share of Series B2 Convertible Preferred Stock shall automatically convert, without the payment of any additional consideration, into shares of Common Stock at the Series B2 Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 4(a) hereof The Corporation shall give the holders of Series B2 Convertible Preferred Stock notice of its intent to complete Qualified Public Offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(c) *Conversion Procedure*. A holder of shares of Series B2 Convertible Preferred Stock shall exercise the conversion rights contained in Section 4(a) hereof by giving written notice of the date upon which such holder elects to convert a stated number of shares of

Series B2 Convertible Preferred Stock into Common Stock. Such a notice chat' be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series B2 Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series B2 Convertible Preferred Stock shall be effective as of (i) the date the Corporation received both such holder's written notice to convert and the certificate(s) for the share or shares of Series B2 Convertible Preferred Stock to be converted or (ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 4(a) or 4(b) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(d) *Issuance of Certificates; Time Conversion Effected*.

(i) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series B2 Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 4(a) hereof, the written notice referred to in Section 4(c), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series B2 Convertible Preferred Stock.

(ii) A conversion of Series B2 Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 4(a) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 4(c) and the certificate(s) for the share or shares of Series B2 Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of an automatic conversion pursuant to Section 4(b) hereof, immediately prior to the closing of the Qualified Public Offering or a Qualified Sale of the Corporation, if and as applicable, or upon the date specified in the Series B2 Conversion Election Notice, if and as applicable. On and after the effective date of conversion, the person or persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 4(c) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(e) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series B2 Convertible Preferred Stock into Common Stock and no payment or adjustment shall be made upon any conversion on account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the shares surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 4(d) hereof in case the number of shares of Series B2 Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 4(d) hereof exceeds the number of shares converted, the Corporation shall, upon such conversion, execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or certificates for the number of shares of Series B2 Convertible Preferred Stock represented by the certificate or certificates surrendered which are not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section

4(e), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series B2 Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors of the Corporation.

(f) *Conversion Adjustments*.

(i) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock (other than any Series B2 Excluded Shares) as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series B2 Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series B2 Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section 4(f)(i) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(ii) Sale of Common Stock.

(1) In the event the Corporation shall issue, sell or exchange, after the First Issue Date, any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B2 Excluded Shares), for a consideration per share less than the Series B2 Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series B2 Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B2 Convertible Preferred Stock shall promptly be reduced to an amount determined by multiplying such Series B2 Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series B2 Conversion Price (prior to adjustment), and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such

additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion or exercise of any then outstanding Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series B2 Excluded Shares), for a consideration per share less than the Series B2 Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange during the Reference Period, the Series B2 Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series B Convertible Preferred stock shall promptly be reduced to an amount equal to the consideration per share in such issuance, sale or exchange.

(iii) Sale of Options, Rights or Convertible Securities.

(1) In the event the Corporation shall issue, after the First issue date, options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B2 Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock (other than any Series B2 Excluded Shares), directly or indirectly, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B2 Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series B2 Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series B2 Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, right or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (v) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the "Net Aggregate Consideration") would purchase at the Series B2 Conversion Price prior to adjustment, and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series B2

Convertible Common Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series B2 Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly (other than any Series B2 Excluded Shares), for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined above) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible or exchangeable securities were exercised or converted to the fullest extent permitted by their terms) less than the Series B2 Conversion Price in effect immediately prior to the issuance of such securities, the Series B2 Conversion Price in effect immediately prior to the issuance of such options, warrants, rights or convertible or exchangeable securities shall be reduced to an amount equal to the consideration per share in such issuance.

(iv) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series B2 Excluded Shares) changes at any time, the Series B2 Conversion Price in effect at the time of such change shall be readjusted to the Series B2 Conversion Price which would have been in effect at such time had such options or convertible securities provided for such changed consideration per share (determined as provided in Section 4(f)(iii) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series B2 Conversion Price will be made only as and to the extent that the Series B2 Conversion Price effective upon such adjustment remains less than or equal to the Series B2 Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series B2 Conversion Price shall be made under this Section 4(f) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights or pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series B2 Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which give rise to such adjustment expire or are canceled without having been exercised, so that the Series B2 Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series B2 Conversion Price in effect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series B2 Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(v) Discretionary Adjustments. The Corporation shall also be entitled to make upward adjustments in the Series B2 Conversion Price as it in its discretion shall determine to be advisable, so that any stock dividends, subdivision of shares, distribution of rights to purchase stock or securities, or distribution of securities convertible into or

exchangeable for stock (or any transaction which could be treated as any of the foregoing transactions pursuant to Section 305 of the Internal Revenue Code of 1986, as amended) hereafter made by the Corporation to its stockholders shall not be taxable to such stockholders.

(vi) Limitations on Adjustments. No adjustment in the Series B2 Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 4(f)(vi) are not required to be made shall be carried forward and taken into account in any subsequent adjustments. Any adjustment in the Series B2 Conversion Price shall apply, upon issuance, to shares of Series B2 Preferred Stock which have been authorized but not issued.

(vii) Computation of Adjustments; Notice. Whenever the Series B2 Conversion Price is adjusted as herein provided, the Corporation shall:

(1) promptly compute the adjusted Series B2 Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series B2 Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(2) mail a notice to the holders of the outstanding shares of the Series B2 Convertible Preferred Stock stating that the Series B2 Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series B2 Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

5. Other Notices. If an Extraordinary Transaction or a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier service, in each case, postage prepaid, or by personal delivery, addressed to each holder of any shares of Series B2 Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, (a) at least 30 days prior written notice of the date on which the books of the Corporation shall close or a record shall be taken for such dividend, distribution or subscription rights or for determining rights to vote in respect of any such Extraordinary Transaction or a Liquidation event, and (b) in the case of any such Extraordinary Transaction or a Liquidation Event, at least 30 days prior written notice of the date when the same shall take place. Such notice in accordance with the foregoing clause (a) shall also specify, in the case of any such dividend, distribution or subscription rights, the date on which the holders of Common Stock shall be entitled thereto, and such notice in accordance with the foregoing clause (b) shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Extraordinary Transaction or a Liquidation Event, as the case may be; provided however, that in the event of an increase in the Series B2 Conversion Price resulting from any distribution, subscription rights or dividend declared by the Corporation, each holder of Series B2 Convertible Preferred Stock shall have the option to receive either the distribution, subscription rights or dividend or a decrease in the Series B2 Conversion Price. In no such event shall such holder receive a distribution, subscription rights or dividend and the decrease in the

Series B2 Conversion Price. In its notice to stockholders pursuant to this Section 5, the Corporation shall enclose a prepaid self-addressed envelope containing a form with which such stockholder may choose either the distribution, subscription rights or dividend or the decrease in Series B2 Conversion Price. In the event said form is not returned to the Corporation by the stockholder in ten business days, said stockholder shall be deemed to have chosen to receive the distribution, subscription rights or declared dividend. The decrease in the Series B2 Conversion Price shall be calculated by subtracting from the Series B2 Conversion Price then in effect an amount equal to the fair market value (as determined by the Board of Directors of the Corporation in good faith) of the distribution, subscription rights or declared dividend offered to each holder of Series B2 Convertible Preferred Stock as provided in this Section 5.

6. Stock to be Reserved. The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series B2 Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series B2 Convertible Preferred Stock. The Corporation covenants that all shares of Common Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series B2 Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series B2 Conversion Price if the total number of shares of Common Stock issued and issuable alter such action upon conversion of the Series B2 Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by the Corporation’s Certificate of Incorporation.

7. No Reissuance of Series B2 Convertible Preferred Stock. Shares of Series B2 Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

8. Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series B2 Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series B2 Convertible Preferred Stock which is being converted.

9. Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series B2 Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series B2 Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series B2 Convertible Preferred Stock.

10. Voting.

(a) *General*. Except as set forth in Section 10(b), as otherwise required by law, or as set forth in the Corporation's Certificate of Incorporation, (i) the holders of Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: (A) the holders of Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Preferred Stock are convertible on the record date for the vote and (B) the holders of Common Stock shall have one vote per share of Common Stock and (ii) the holders of the Preferred Stock and the holders of Common Stock will vote as a single class on all matters.

(b) *Certain Issuances or Redemptions*. Provided that more than 1,612,903 shares of Series B2 Preferred Stock are issued and outstanding, the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier service, in each case, postage prepaid, or by personal delivery, addressed to each holder of Series B2 Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, at least 20 days prior written notice of: (i) the proposed issuance by the Corporation of any class of Preferred Stock that has a Liquidation Event preference senior to the Series B2 Preferred Stock; or (ii) the date on which the Corporation proposes to redeem or repurchase, for cash, more than 90% of the shares of any outstanding class of its Preferred Stock. In either case, the Corporation's notice required by this Section 10(b) shall specify the terms of the proposed issuance, redemption or repurchase, as the case may be, and shall be accompanied by a prepaid self-addressed return envelope containing a form with which such holder of Series B2 Preferred Stock may either consent to or reject the proposed transaction (the "Consent Form"). If the holders of more than 75% of the Series B2 Preferred Stock to whom Consent Forms were sent reject the proposed transaction pursuant to signed and returned Consent Forms, the Corporation shall be prohibited from completing such transaction. In the event a Consent Form marked to reject the proposed transaction is not returned to the Corporation by a holder of Series B2 Preferred Stock within ten business days, said holder shall be deemed to have consented to the transaction.

11. Definitions. As used in this Certificate of Designation, the following terms have the following meanings for purposes of this Certificate of Designation:

(a) "Capital Stock" means any capital stock of any class or series (however designated) of the Corporation.

(b) "First Issue Date" means the earliest date on which shares of the Series B2 Convertible Preferred Stock are first issued by the Corporation.

(c) "Original Issue Date" means the dale that the applicable shares of the Series B2 Convertible Preferred Stock are issued by the Corporation.

(d) "Person" means an individual, partnership, corporation, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

(e) “Qualified Sale of the Corporation” means any Sale of the Corporation whereby each share of Common Stock then issued and outstanding (including for such purposes, all shares of Common Stock then issuable upon the conversion of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B2 Convertible Preferred Stock and any other class or series of Preferred Stock then issued and outstanding and all shares of Common Stock then issuable upon the conversion or exchange of any options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock directly or indirectly) is entitled to receive gross proceeds from such transaction, on a per share basis, having a fair market value (as determined by the Board of Directors of the Corporation in good faith) of not less than the then applicable Series B2 Conversion Price.

(f) “Reference Period” means the period beginning on the First Issue Date and terminating upon the twelve month anniversary of the First Issue Date.

(g) “Sale of the Corporation” means: (a) a merger or consolidation of the Corporation into or with any other Person or Persons who are not affiliates of the Corporation in which the stockholders of the Corporation immediately prior to such merger or consolidation possess less than a majority of the Corporation’s or the surviving entity’s issued and outstanding voting Capital Stock immediately after such merger or consolidation; (b) a single transaction or a series of transactions pursuant to which at least a majority of the issued and outstanding voting Capital Stock of the Corporation is acquired by a Person or group of affiliated Persons who did not hold (and whose affiliates did not hold) any of the issued and outstanding voting Capital Stock of the Corporation *as* of the First Issue Date; or (c) a single transaction or series of transactions pursuant to which a Person or Persons who are not affiliates of the Corporation acquire all or substantially all of the assets of the Corporation. Notwithstanding the foregoing, any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force having such an effect and any issuance of Capital Stock by the Corporation in a bona fide capital raising transaction having such an effect shall not be a “Sale of the Corporation” hereunder.

(h) “Series B2 Excluded Shares” means any (i) Capital Stock offered in any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force; (ii) Capital Stock issued pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (iii) Capital Stock issued pursuant to a joint venture or strategic alliance by the Corporation with another Person; (iv) Capital Stock or warrants or options to acquire Capital Stock issued to Persons as partial consideration for debt financing or lease financing; (v) shares of Common Stock, issued or issuable to any Person as an employee, director or officer of, or consultant or service provider to, the Corporation pursuant to a stock purchase or stock option plan or other employee stock arrangement of the Corporation and any shares of Common Stock issued upon the exercise thereof; (vi) Capital Stock issued to the Corporation’s stockholders in connection with any stock split, stock dividend or recapitalization by the Corporation; (vii) Capital Stock issued pursuant to the exercise or conversion of options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly, outstanding as of the date hereof, (viii) shares of the Corporation’s

Capital Stock or options, warrants or rights to subscribe for shares of the Corporation's Capital Stock, directly or indirectly approved for issuance by the holders of a majority of the then outstanding shares of Preferred Stock, together as a single class on an as converted basis; (ix) securities issued in replacement of any securities issued pursuant to the preceding subsections (i) - (viii), (x) shares of Common Stock issued upon conversion or exchange of any Capital Stock, or (xi) the authorized but unissued shares of Series B2 Convertible Preferred Stock.

All capitalized terms used and not defined herein shall have the meanings given to them in the Amended and Restated Certificate of Incorporation of Vaccinex, Inc.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 19th day of January, 2007.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President and CEO

VACCINEX, INC.

CERTIFICATE OF AMENDMENT
TO SERIES B2 PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does certify that pursuant to the authority vested in the Board of Directors of the Corporation (the "Board of Directors") by its Certificate of Incorporation, as amended and restated, and pursuant to the provisions of Section 151 of the General Corporation Law of the State of Delaware, said Board of Directors, by unanimous written consent, adopted the following resolutions which remain in full force and effect as of the date hereof:

RESOLVED, that pursuant to the authority vested in the Board of Directors by its Certificate of Incorporation, as amended and restated, the Board of Directors does hereby increase the number of authorized shares of Series B2 Convertible Preferred Stock, par value $0.001 per share, from 5,500,000 shares to 7,500,000 shares, having the designations, preferences and relative and other special rights, qualifications, limitations and restrictions as set forth in the Series B2 Preferred Stock Certificate of Designation dated January 19, 2007 (the "Certificate of Designation").

RESOLVED, that Paragraph 1 of the Certificate of Designation shall hereby be amended and restated to read in its entirety as follows:

"1. Designation of Series. Seven Million Five Hundred Thousand (7,500,000) shares of the Corporation's authorized Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series B2 Convertible Preferred Stock" (hereinafter referred to as "Series B2 Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences as set forth herein. Certain capitalized terms used herein are defined in Section 11 below."

RESOLVED, that all other paragraphs of the Certificate of Designation shall remain in full force and effect.

(remainder of page intentionally blank)

IN WITNESS WHEREOF, Vaccinex Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, as of this 30th day of August, 2007.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Maurice Zauderer, President

(signature page to Amendment to Series B2 Certificate of Designation)

Exhibit 3.15

VACCINEX, INC.

SECOND AMENDED AND RESTATED
SERIES C CONVERTIBLE PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify as follows:

FIRST: The name of the Corporation is Vaccinex, Inc.

Second: A Certificate of Designation creating, authorizing and providing for the issuance of Series C Convertible Preferred Stock, par value $0.001 per share, consisting of twelve million four hundred thousand (12,400,000) shares, was filed with the Secretary of State of the State of Delaware on April 9, 2010. An Amended and Restated Series C Convertible Preferred Stock Certificate of Designation (the "Prior Certificate") was filed with the Secretary of State of the State of Delaware on May 6, 2013.

Third: Seven million two hundred five thousand eight hundred eighty-two (7,205,882) shares of Series C Convertible Preferred Stock have been issued as of the date hereof.

Fourth: This Amended and Restated Series C Convertible Preferred Stock Certificate of Designation was duly adopted by the Board of Directors of the Corporation (the "Board of Directors"), declaring its advisability, at a meeting duly called on July 11, 2016, followed by the written consent of the holders of a majority of all of the outstanding stock entitled to vote thereon, all in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

Fifth: That the Prior Certificate is hereby amended and restated to revise the dividend rights with respect to the Series C Convertible Preferred Stock, adjust the Series C Conversion Price (as defined below) and set forth the designations, preferences and relative and other special rights, qualifications, limitations and restrictions of the corporation's Series C Convertible Preferred Stock as follows:

1. Designation of Series. Seven million, two hundred five thousand, eight hundred eighty-two (7,205,882) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series C Convertible Preferred Stock" (hereinafter referred to as "Series C Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms used herein are defined in Section 11 below.

2. Dividends. The holders of the Series C Convertible Preferred Stock shall be entitled to receive dividends, only when, as and if the Board of Directors shall:

(a) declare a dividend payable upon outstanding shares of the Series C Convertible Preferred Stock; or

(b) other than in the case of a preferential dividend provided for in the applicable Certificate of Designation for the Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, or Series B2 Convertible Preferred Stock, declare a dividend payable upon outstanding shares of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series D Convertible Preferred Stock or Common Stock, in which event, the Board of Directors shall contemporaneously declare a dividend such that the holders of the Series C Convertible Preferred Stock shall be entitled to receive the same per share dividends to which such holders would have been entitled had the Series C Convertible Preferred Stock been fully converted into shares of Common Stock pursuant to the provisions of Section 4 hereof as of the record date for determining the holders of shares of Common Stock entitled to receive such dividend.

3. Liquidation.

(a) *Liquidation Preference.* Upon any Sale of the Corporation, liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series C Convertible Preferred Stock and the holders of any other series of pari passu Preferred Stock of the Corporation shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and (i) before any distribution or payment is made upon any shares of the Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B2 Convertible Preferred Stock or Common Stock, and (ii) pari passu with any shares of the Series D Convertible Preferred Stock, the sum of $3.40 per share plus all declared but unpaid dividends due to the holders of the Series C Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series C Convertible Preferred Stock) for each share of Series C Convertible Preferred Stock then held by such stockholder (the "Series C Liquidation Amount"). If the assets to be distributed among the holders of Series C Convertible Preferred Stock upon a Liquidation Event are insufficient to permit payment of the entire Series C Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series C Convertible Preferred Stock, Series D Convertible Preferred Stock and the holders of any other series of pari passu preferred stock of the Corporation. Upon any Liquidation Event and after the holders of Series C Convertible Preferred Stock, Series D Convertible Preferred Stock and any pari passu preferred stock have been paid their entire Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed among the holders of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, and Series B2 Convertible Preferred Stock (on an as-converted basis) and the holders of Common Stock in accordance with the Certificate of Incorporation, as may be amended from time to time.

(b) *Sale of the Corporation not a Liquidation Event.* Notwithstanding Section 3(a), a Sale of the Corporation shall not be deemed to be a Liquidation Event if the holders of at least fifty percent (50%) of the Series C Convertible Preferred Stock elect to waive the provisions of Section 3(a) with respect to such Sale of the Corporation.

(c) *Notice.* If a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier, service postage prepaid, or by personal delivery, addressed to each holder of any shares of Series C Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, at least 30 days prior written notice of the date when the same is expected to take place. Such notice shall include a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail the per share amount each holder of Series C Convertible Preferred Stock will receive pursuant to the provisions of Section 3(a) hereof and stating in reasonable detail the facts upon which such amount was determined. Such notice shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Liquidation Event.

4. Conversion.

(a) *Optional Conversion.* Subject to the terms and conditions hereof, a holder of shares of Series C Convertible Preferred Stock may, at such holders' option, at any time and from time to time, convert some or all shares of Series C Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from multiplying (i) the aggregate number of shares of Series C Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $3.40 (the "Series C Purchase Price") by (2) the Series C Conversion Price (as defined in this Section 4(a)) then in effect at the time of conversion. The "Series C Conversion Price" shall be $1.82 subject to adjustment, from time to time, as provided in Section 4(f). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series C Convertible Preferred Stock to convert any such shares of Series C Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of a Series C Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series C Liquidation Amount due such holder for each share of Series C Preferred Stock held by such holder, such holder's right to convert under this Section 4(a) shall not be terminated with respect to that number of shares of Series C Convertible Preferred Stock equal to the amount of the aggregate Series C Liquidation Amount not paid by the Corporation to the holder divided by the then current Series C Purchase Price.

(b) *Conversion Upon Qualified Public Offering.* Upon (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share of not less than $5.00 (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or similar event with respect to the Common Stock) and with gross proceeds to the Corporation of not less than $30 million (a "Qualified Public Offering") or (ii) the affirmative vote of a majority of the holders of the then outstanding shares of the Corporation's Preferred Stock, voting together as a single class on an as converted basis, each share of Series C Convertible Preferred Stock shall convert, without the payment of any additional consideration, into shares of Common Stock at the Series C Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 4(a) hereof. The Corporation shall give the holders of Series C Convertible Preferred Stock notice of its intent to complete Qualified Public Offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(c) *Conversion Procedure.* A holder of shares of Series C Convertible Preferred Stock shall exercise the conversion rights contained in Section 4(a) hereof by giving written notice of the date upon which such holder elects to convert a stated number of shares of Series C Convertible Preferred Stock into Common Stock. Such a notice shall be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series C Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series C Convertible Preferred Stock shall be effective as of (i) the date the Corporation received both such holder's written notice to convert and the certificate(s) for the share or shares of Series C Convertible Preferred Stock to be converted or (ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 4(a) or 4(b) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(d) *Issuance of Certificates; Time Conversion Effected*.

(i) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series C Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 4(a) hereof, the written notice referred to in Section 4(c), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series C Convertible Preferred Stock.

(ii) A conversion of Series C Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 4(a) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 4(c) and the certificate(s) for the share or shares of Series C Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of a conversion pursuant to Section 4(b) hereof, immediately prior to the closing of the Qualified Public Offering. On and after the effective date of conversion, the Person or Persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 4(c) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(e) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series C Convertible Preferred Stock into Common Stock and no payment or adjustment shall be made upon any conversion on account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the shares surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 4(d) hereof. In case the number of shares of Series C Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 4(d)

hereof exceeds the number of shares converted, the Corporation shall, upon such conversion, execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or certificates for the number of shares of Series C Convertible Preferred Stock represented by the certificate or certificates surrendered which are not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section 4(e), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series C Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors.

(f) *Conversion Adjustments*.

(i) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series C Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series C Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section 4(0(i) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(ii) Sale of Common Stock.

(1) In the event the Corporation shall issue, sell or exchange, after the First Issue Date, any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series C Excluded Shares), for a consideration per share less than the Series C Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series C Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares shall promptly be reduced to an amount determined by multiplying such Series C Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series D

Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series C Conversion Price (prior to adjustment), and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion or exercise of any then outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series C Excluded Shares), for a consideration per share less than the Series C Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange during the Reference Period, the Series C Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series C Convertible Preferred stock shall promptly be reduced to an amount equal to the consideration per share in such issuance, sale or exchange.

(iii) Sale of Options, Rights or Convertible Securities.

(1) In the event the Corporation shall issue, after the First Issue Date, options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series C Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock (other than any Series C Excluded Shares), directly or indirectly, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series C Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series C Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series C Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, right or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the "Net Aggregate Consideration") would purchase at the Series C Conversion Price prior to adjustment, and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series C Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly (other than any Series C Excluded Shares), for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined above) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible or exchangeable securities were exercised or converted to the fullest extent permitted by their terms) less than the Series C Conversion Price in effect immediately prior to the issuance of such securities, the Series C Conversion Price in effect immediately prior to the issuance of such options, warrants, rights or convertible or exchangeable securities shall be reduced to an amount equal to the consideration per share in such issuance.

(iv) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series C Excluded Shares) changes at any time, the Series C Conversion Price in effect at the time of such change shall be readjusted to the Series C Conversion Price which would have been in effect at such time had such options or convertible securities provided for such changed consideration per share (determined as provided in Section 4(f)(iii) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series C Conversion Price will be made only as and to the extent that the Series C Conversion Price effective upon such adjustment remains less than or equal to the Series C Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series C Conversion Price shall be made under this Section 4(f) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights or pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series C Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which give rise to such adjustment expire or are canceled without having been exercised, so that the Series C Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series C Conversion Price in effect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series C Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(v) Limitations on Adjustments. No adjustment in the Series C Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 4(0(v) are not required to be made shall be carried forward and taken into account in any subsequent adjustments. Any adjustment in the Series C Conversion Price shall apply, upon issuance, to shares of Series C Preferred Stock which have been authorized but not issued.

(vi) Computation of Adjustments; Notice. Whenever the Series C Conversion Price is adjusted as herein provided, the Corporation shall:

(1) promptly compute the adjusted Series C Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series C Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(2) mail a notice to the holders of the outstanding shares of the Series C Convertible Preferred Stock stating that the Series C Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series C Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

5. Stock to be Reserved. The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series C Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series C Convertible Preferred Stock. The Corporation covenants that all shares of Common Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series C Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series C Conversion Price if the total number of shares of Common Stock issued and issuable after such action upon conversion of the Series C

Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by the Certificate of Incorporation.

6. No Reissuance of Series C Convertible Preferred Stock. Shares of Series C Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

7. Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series C Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series C Convertible Preferred Stock which is being converted.

8. Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series C Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series C Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series C Convertible Preferred Stock.

9. Voting. Except as otherwise required by law or the Certificate of Incorporation, (a) the holders of Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: (i) the holders of Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Preferred Stock are convertible on the record date for the vote and (ii) the holders of Common Stock shall have one vote per share of Common Stock and (b) the holders of the Preferred Stock and the holders of Common Stock will vote as a single class on all matters.

10. Approvals of Certain Issuances. Without the consent of the majority of the holders of the Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B Convertible Preferred Stock, and Series A Convertible Preferred Stock (the "Approving Classes"), voting together as a class on an as converted basis, the Corporation shall not: (i) establish a new series of Preferred Stock which ranks senior to or *pari passu* with the Series C Convertible Preferred Stock; (ii) issue Common Stock or Preferred Stock (other than Series C Excluded Shares) at a price or conversion price lower than the then-applicable Series C Conversion Price; (iii) issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly, or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly, other than Series C Excluded Shares, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined pursuant to Section 4(f)(iii)(1)(A)) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the then-applicable Series C Conversion Price; (iv) issue Capital Stock pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (v) issue Capital Stock pursuant to a joint venture or strategic alliance by the Corporation with another Person; or (vi) issue Capital Stock or warrants or options to acquire Capital Stock to Persons as partial consideration for debt financing or lease financing.

11. Definitions. As used in this Certificate of Designation, the following terms have the following meanings for purposes of this Certificate of Designation:

(a) “Capital Stock” means any capital stock of any class or series (however designated) of the Corporation.

(b) “First Issue Date” means the earliest date on which shares of the Series C Convertible Preferred Stock are first issued by the Corporation.

(c) “Person” means an individual, partnership, corporation, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

(d) “Reference Period” means the period beginning on the First Issue Date and terminating upon the twelve month anniversary of the First Issue Date.

(e) “Sale of the Corporation” means: (a) a merger or consolidation of the Corporation into or with any other Person or Persons who are not affiliates of the Corporation in which the stockholders of the Corporation immediately prior to such merger or consolidation possess less than a majority of the Corporation’s or the surviving entity’s issued and outstanding voting Capital Stock immediately after such merger or consolidation; (b) a single transaction or a series of transactions pursuant to which at least a majority of the issued and outstanding voting Capital Stock of the Corporation is acquired by a Person or group of affiliated Persons who did not hold (and whose affiliates did not hold) any of the issued and outstanding voting Capital Stock of the Corporation as of the First Issue Date; or (c) a single transaction or series of transactions pursuant to which a Person or Persons who are not affiliates of the Corporation acquire all or substantially all of the assets of the Corporation. Notwithstanding the foregoing, any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force having such an effect and any issuance of Capital Stock by the Corporation in a bona fide capital raising transaction having such an effect shall not be a “Sale of the Corporation” hereunder.

(f) “Series C Excluded Shares” means any (i) Capital Stock issued pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (ii) Capital Stock issued pursuant to a joint venture or strategic alliance by the Corporation with another Person; (iii) Capital Stock or warrants or options to acquire Capital Stock issued to Persons as partial consideration for debt financing or lease financing; (iv) shares of Common Stock, issued or issuable to any Person as an employee, director or officer of, or consultant or service provider to, the Corporation pursuant to a stock purchase or stock option plan or other employee stock arrangement of the Corporation and any shares of Common Stock issued upon the exercise thereof; (v) Capital Stock issued pursuant to the exercise or conversion of options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly, outstanding as of the date hereof; (vi) shares of the Corporation’s Capital Stock or options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly approved for issuance by the holders of a majority of the then outstanding shares of

Preferred Stock, voting together as a single class on an as-converted basis; (vii) securities issued in replacement of any securities issued pursuant to the preceding subsections; (viii) shares of Common Stock issued upon conversion or exchange of any Capital Stock; (ix) the authorized but unissued shares of Series C Convertible Preferred Stock; and (x) the authorized but unissued shares of Series D Convertible Preferred Stock.

All capitalized terms used and not defined herein shall have the meanings given to them in the Amended and Restated Certificate of Incorporation of Vaccinex, Inc.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 14 day of July, 2016.

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President and CEO

[Series C Convertible Preferred Stock Signature Page]

Exhibit 3.16

VACCINEX, INC.

AMENDED AND RESTATED
SERIES D CONVERTIBLE PREFERRED STOCK
CERTIFICATE OF DESIGNATION

Pursuant to Section 151 of the
General Corporation Law of the State of Delaware

Vaccinex, Inc. (the "Corporation"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify as follows:

FIRST: The name of the Corporation is Vaccinex, Inc.

SECOND: A Certificate of Designation creating, authorizing and providing for the issuance of Series D Convertible Preferred Stock, par value $0.001 per share, consisting of twenty-three million five hundred thousand (23,500,000) shares, was filed with the Secretary of State of the State of Delaware on July 15, 2016 (the "Original Certificate").

THIRD: Twenty-three million three hundred ninety-two thousand thirty-eight (23,392,038) shares of Series D Convertible Preferred Stock have been issued as of the date hereof.

FOURTH: This Amended and Restated Series D Convertible Preferred Stock Certificate of Designation was duly adopted by the Board of Directors of the Corporation (the "Board of Directors"), declaring its advisability, at a meeting duly called on May 2, 2017, followed by the written consent of the holders of a majority of all of the outstanding stock entitled to vote thereon, all in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

FIFTH: That the Original Certificate is hereby amended and restated to revise the number of authorized shares of Series C Convertible Preferred Stock as follows:

1. Designation of Series. Thirty-three million five hundred thousand (33,500,000) shares of the Corporation's authorized but unissued Preferred Stock, $0.001 par value, are hereby designated as a series of Preferred Stock to be known as "Series D Convertible Preferred Stock" (hereinafter referred to as "Series D Convertible Preferred Stock"), which shall have the voting powers, limitations, rights and preferences set forth herein. Certain capitalized terms used herein are defined in Section 11 below.

2. Dividends. The holders of the Series D Convertible Preferred Stock shall be entitled to receive dividends, only when, as and if the Board of Directors shall:

(a) declare a dividend payable upon outstanding shares of the Series D Convertible Preferred Stock; or

(b) other than in the case of a preferential dividend provided for in the applicable Certificate of Designation for the Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, or Series B2 Convertible Preferred Stock, declare a dividend payable upon outstanding shares of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series C Convertible Preferred Stock or Common Stock, in which event, the Board of Directors shall contemporaneously declare a dividend such that the holders of the Series D Convertible Preferred Stock shall be entitled to receive the same per share dividends to which such holders would have been entitled had the Series D Convertible Preferred Stock been fully converted into shares of Common Stock pursuant to the provisions of Section 4 hereof as of the record date for determining the holders of shares of Common Stock entitled to receive such dividend.

3. Liquidation.

(a) *Liquidation Preference.* Upon any Sale of the Corporation, liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary (each a "Liquidation Event"), holders of the shares of Series D Convertible Preferred Stock and the holders of any other series of pari passu Preferred Stock of the Corporation shall be entitled to be paid, after payment or provision for payment of the debts and other liabilities of the Corporation and (i) before any distribution or payment is made upon any shares of the Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B2 Convertible Preferred Stock or Common Stock, and (ii) pari passu with any shares of the Series C Convertible Preferred Stock, the sum of $1.82 per share plus all declared but unpaid dividends due to the holders of the Series D Convertible Preferred Stock (adjusted appropriately for stock splits, stock dividends, recapitalizations and the like with respect to the Series D Convertible Preferred Stock) for each share of Series D Convertible Preferred Stock then held by such stockholder (the "Series D Liquidation Amount"). If the assets to be distributed among the holders of Series D Convertible Preferred Stock upon a Liquidation Event are insufficient to permit payment of the entire Series D Liquidation Amount, then all assets of the Corporation to be distributed shall be distributed ratably among the holders of Series D Convertible Preferred Stock, Series C Convertible Preferred Stock and the holders of any other series of pari passu preferred stock of the Corporation. Upon any Liquidation Event and after the holders of Series D Convertible Preferred Stock, Series C Convertible Preferred Stock and any pari passu preferred stock have been paid their entire Liquidation Amount, the remaining net assets of the Corporation available for distribution to stockholders shall be distributed among the holders of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Series B1 Convertible Preferred Stock and Series B2 Convertible Preferred Stock (on an as-converted basis) and the holders of Common Stock in accordance with the Certificate of Incorporation, as may be amended from time to time.

(b) *Sale of the Corporation not a Liquidation Event.* Notwithstanding Section 3(a), a Sale of the Corporation shall not be deemed to be a Liquidation Event if the holders of at least fifty percent (50%) of the Series D Convertible Preferred Stock elect to waive the provisions of Section 3(a) with respect to such Sale of the Corporation.

(c) *Notice*. If a Liquidation Event occurs or will likely occur, then the Corporation shall give, by registered or certified first class mail, return receipt requested, by a nationally recognized courier, service postage prepaid, or by personal delivery, addressed to each holder of any shares of Series D Convertible Preferred Stock at the address of such holder as shown on the books of the Corporation, at least 30 days prior written notice of the date when the same is expected to take place. Such notice shall include a certificate prepared by the chief financial officer of the Corporation describing in detail the facts of such Liquidation Event, stating in reasonable detail the per share amount each holder of Series D Convertible Preferred Stock will receive pursuant to the provisions of Section 3(a) hereof and stating in reasonable detail the facts upon which such amount was determined. Such notice shall also specify the date on which the holders of Common Stock shall be entitled to exchange their Common Stock for securities or other property deliverable upon such Liquidation Event.

4. Conversion.

(a) *Optional Conversion.* Subject to the terms and conditions hereof, a holder of shares of Series D Convertible Preferred Stock may, at such holders' option, at any time and from time to time, convert some or all shares of Series D Convertible Preferred Stock, without the payment of any additional consideration, into the number of shares of Common Stock which results from multiplying (i) the aggregate number of shares of Series D Convertible Preferred Stock to be converted by (ii) the quotient obtained by dividing (1) $1.82 (the "Series D Purchase Price") by (2) the Series D Conversion Price (as defined in this Section 4(a)) then in effect at the time of conversion. The "Series D Conversion Price" shall be initially $1.82 subject to adjustment, from time to time, as provided in Section 4(f). Notwithstanding the foregoing and anything else to the contrary contained herein, the right of a holder of the Series D Convertible Preferred Stock to convert any such shares of Series D Convertible Preferred Stock shall terminate at the close of business on the last full business day that immediately precedes the date fixed for payment of a Series D Liquidation Amount; provided, however, that, in the event the Corporation does not pay such holder the entire Series D Liquidation Amount due such holder for each share of Series D Preferred Stock held by such holder, such holder's right to convert under this Section 4(a) shall not be terminated with respect to that number of shares of Series D Convertible Preferred Stock equal to the amount of the aggregate Series D Liquidation Amount not paid by the Corporation to the holder divided by the then current Series D Purchase Price.

(b) *Conversion Upon Qualified Public Offering.* Upon (i) the closing of an underwritten public offering pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force, covering the offer and sale of Common Stock for the account of the Corporation to the public at an offering price per share of not less than $5.00 (which amount shall be subject to equitable adjustment whenever there shall occur a stock dividend, stock split, combination of shares, reclassification or similar event with respect to the Common Stock) and with gross proceeds to the Corporation of not less than $30 million (a "Qualified Public Offering") or (ii) the affirmative vote of a majority of the holders of the then outstanding shares of the Corporation's Preferred Stock, voting together as a single class on an as converted basis, each share of Series D Convertible Preferred Stock shall convert, without the payment of any additional consideration, into shares of Common Stock at the Series D Conversion Price then in effect as if the holders thereof had exercised their right to convert under Section 4(a) hereof. The Corporation shall give the holders of Series D Convertible Preferred Stock notice of its intent to complete Qualified Public Offering at least 30 days before the anticipated closing date of such offering and promptly after the closing of such an offering.

(c) *Conversion Procedure.* A holder of shares of Series D Convertible Preferred Stock shall exercise the conversion rights contained in Section 4(a) hereof by giving written notice of the date upon which such holder elects to convert a stated number of shares of Series D Convertible Preferred Stock into Common Stock. Such a notice shall be sent to the Corporation at its principal office (or such other office or agency of the Corporation as the Corporation may designate by notice in writing to the holder or holders of the Series D Convertible Preferred Stock) at any time during its usual business hours, together with a statement of the name or names (with address(es)) in which the certificate or certificates for shares of Common Stock shall be issued. Such conversion of Series D Convertible Preferred Stock shall be effective as of (i) the date the Corporation received both such holder's written notice to convert and the certificate(s) for the share or shares of Series D Convertible Preferred Stock to be converted or (ii) such later date as shall be specified in such notice. In the event of any conversion under Sections 4(a) or 4(b) hereof, the holder shall surrender the certificate or certificates for the shares to be converted to the Corporation in the same manner.

(d) *Issuance of Certificates; Time Conversion Effected*.

(i) Promptly after the Corporation receives (1) the certificate or certificates for the share or shares of Series D Convertible Preferred Stock to be converted, and (2) if the conversion is being made under Section 4(a) hereof, the written notice referred to in Section 4(c), the Corporation shall issue and deliver, or cause to be issued and delivered, to the holder, registered in such name or names as such holder may direct, a certificate or certificates for the number of whole shares of Common Stock issuable upon the conversion of such share or shares of Series D Convertible Preferred Stock.

(ii) A conversion of Series D Convertible Preferred Stock shall be effective (1) in the case of conversion pursuant to Section 4(a) hereof, as of the date of receipt by the Corporation of such holder's written notice referred to in Section 4(c) and the certificate(s) for the share or shares of Series D Convertible Preferred Stock to be converted or such later date as shall be specified in such notice and (2) in the case of a conversion pursuant to Section 4(b) hereof, immediately prior to the closing of the Qualified Public Offering. On and after the effective date of conversion, the Person or Persons entitled to receive the Common Stock shall, subject to compliance with the conversion procedures in Section 4(c) hereof, be treated for all purposes as the record holder or holders of such shares of Common Stock.

(e) *Fractional Shares; Dividends; Partial Conversion.* No fractional shares may be issued upon conversion of the Series D Convertible Preferred Stock into Common Stock and no payment or adjustment shall be made upon any conversion on account of any cash dividends on the Common Stock issued upon such conversion. At the time of each conversion, the Corporation shall pay in cash an amount equal to all dividends, if any, declared but unpaid on the shares surrendered for conversion to the date upon which such conversion is deemed to take place as provided in Section 4(d) hereof. In case the number of shares of Series D Convertible Preferred Stock represented by the certificate or certificates surrendered pursuant to Section 4(d) hereof exceeds the number of shares converted, the Corporation shall, upon such conversion,

execute and deliver to the holder thereof, at the expense of the Corporation, a new certificate or certificates for the number of shares of Series D Convertible Preferred Stock represented by the certificate or certificates surrendered which are not to be converted. If any fractional interest in a share of Common Stock would, except for the provisions of the first sentence of this Section 4(e), be deliverable upon any such conversion, the Corporation, in lieu of delivery of the fractional share thereof, shall pay to the holder surrendering the Series D Convertible Preferred Stock for conversion an amount in cash equal to the fair market value of such fractional interest as determined in good faith by the Board of Directors.

(f) *Conversion Adjustments*.

(i) Stock Dividends, Subdivisions and Combinations. Upon the issuance of additional shares of Common Stock as a dividend or other distribution on outstanding Common Stock, the subdivision of outstanding shares of Common Stock into a greater number of shares of Common Stock, or the combination of outstanding shares of Common Stock into a smaller number of shares of the Common Stock, the Series D Conversion Price shall, simultaneously with the happening of such dividend, subdivision or split be adjusted by multiplying the then effective Series D Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. An adjustment made pursuant to this Section 4(f)(i) shall be given effect, upon payment of such a dividend or distribution, as of the record date for the determination of stockholders entitled to receive such dividend or distribution (on a retroactive basis) and in the case of a subdivision or combination shall become effective immediately as of the effective date thereof.

(ii) Sale of Common Stock.

(1) In the event the Corporation shall issue, sell or exchange, after the First Issue Date, any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series D Excluded Shares), for a consideration per share less than the Series D Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange, the Series D Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares shall promptly be reduced to an amount determined by multiplying such Series D Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any then outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the net aggregate consideration received by the Corporation for the total number of such additional shares of Common Stock so issued would purchase at the Series D Conversion Price (prior to adjustment), and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such additional shares of Common Stock (excluding treasury shares but including all shares of Common Stock, issuable upon conversion or exercise of any then outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of such additional shares of Common Stock so issued.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue, sell or exchange any shares of Common Stock (including shares held in the Corporation's treasury but excluding the issuance of any of the Series D Excluded Shares), for a consideration per share less than the Series D Conversion Price in effect immediately prior to the issuance, sale or exchange of such shares, then, and thereafter successively upon each such issuance, sale or exchange during the Reference Period, the Series D Conversion Price in effect immediately prior to the issuance, sale or exchange of each share of Series D Convertible Preferred stock shall promptly be reduced to an amount equal to the consideration per share in such issuance, sale or exchange.

(iii) Sale of Options, Rights or Convertible Securities.

(1) In the event the Corporation shall issue, after the First Issue Date, options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series D Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock (other than any Series D Excluded Shares), directly or indirectly, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined below) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the Series D Conversion Price in effect immediately prior to the issuance of such options or rights or convertible or exchangeable securities, the Series D Conversion Price in effect immediately prior to the issuance of such options, warrants or rights or securities shall be reduced to an amount determined by multiplying such Series D Conversion Price by a fraction:

(A) the numerator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, right or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the number of shares of Common Stock which the total amount of consideration received by the Corporation for the issuance of such options, warrants, rights or convertible securities, plus the minimum amount set forth in the terms of such security as payable to the Corporation upon the exercise or conversion thereof (the "Net Aggregate Consideration") would purchase at the Series D Conversion Price prior to adjustment, and

(B) the denominator of which shall be (x) the number of shares of Common Stock of all classes outstanding immediately prior to the issuance of such options, warrants, rights or convertible securities (excluding treasury shares but including all shares of Common Stock issuable upon conversion or exercise of any outstanding Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B1 Convertible Preferred Stock, Series B Convertible Preferred Stock, Series A Convertible Preferred Stock, options, warrants, rights or convertible securities), plus (y) the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted.

(2) Notwithstanding the foregoing, in the event the Corporation shall at any time or from time to time during the Reference Period, issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly (other than any Series D Excluded Shares), or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly (other than any Series D Excluded Shares), for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined above) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible or exchangeable securities were exercised or converted to the fullest extent permitted by their terms) less than the Series D Conversion Price in effect immediately prior to the issuance of such securities, the Series D Conversion Price in effect immediately prior to the issuance of such options, warrants, rights or convertible or exchangeable securities shall be reduced to an amount equal to the consideration per share in such issuance.

(iv) Expiration or Change in Price. If the consideration per share provided for in any options or rights to subscribe for shares of Common Stock or any securities exchangeable for or convertible into shares of Common Stock (except for Series D Excluded Shares) changes at any time, the Series D Conversion Price in effect at the time of such change shall be readjusted to the Series D Conversion Price which would have been in effect at such time had such options or convertible securities provided for such changed consideration per share (determined as provided in Section 4(f)(iii) hereof), at the time initially granted, issued or sold; provided, that such adjustment of the Series D Conversion Price will be made only as and to the extent that the Series D Conversion Price effective upon such adjustment remains less than or equal to the Series D Conversion Price that would be in effect if such options, rights or securities had not been issued. No adjustment of the Series D Conversion Price shall be made under this Section 4(f) upon the issuance of any additional shares of Common Stock which are issued pursuant to the exercise of any warrants, options or other subscription or purchase rights or pursuant to the exercise of any conversion or exchange rights in any convertible securities if an adjustment shall previously have been made upon the issuance of such warrants, options or other rights. Any adjustment of the Series D Conversion Price shall be disregarded and rescinded if, as, and when the rights to acquire shares of Common Stock upon exercise or conversion of the warrants, options, rights or convertible securities which give rise to such adjustment expire or are canceled without having been exercised, so that the Series D Conversion Price effective immediately upon such cancellation or expiration shall be equal to the Series D Conversion Price in effect at the time of the issuance of the expired or canceled warrants, options, rights or convertible securities, with such additional adjustments as would have been made to that Series D Conversion Price had the expired or canceled warrants, options, rights or convertible securities not been issued.

(v) Limitations on Adjustments. No adjustment in the Series D Conversion Price shall be required unless such adjustment would require an increase or decrease of at least one percent therein; provided, however, that any adjustments which by reason of this Section 4(f)(v) are not required to be made shall be carried forward and taken into account in any subsequent adjustments. Any adjustment in the Series D Conversion Price shall apply, upon issuance, to shares of Series D Preferred Stock which have been authorized but not issued.

(vi) Computation of Adjustments; Notice. Whenever the Series D Conversion Price is adjusted as herein provided, the Corporation shall:

(1) promptly compute the adjusted Series D Conversion Price in accordance herewith and prepare a certificate signed by an officer of the Corporation setting forth the adjusted Series D Conversion Price, the method of calculation thereof in reasonable detail and the facts requiring such adjustment and upon which such adjustment is based; and

(2) mail a notice to the holders of the outstanding shares of the Series D Convertible Preferred Stock stating that the Series D Conversion Price has been adjusted, the facts requiring such adjustment and upon which such adjustment is based and setting forth the adjusted Series D Conversion Price, such notice to be mailed at or before the time the Corporation mails an interim statement to its stockholders covering the fiscal quarter during which the facts requiring such adjustment occurred, but in any event within 45 days of the end of such fiscal quarter.

5. Stock to be Reserved. The Corporation will at all times reserve and keep available out of its authorized Common Stock or its treasury shares, solely for the purpose of issue upon the conversion of the Series D Convertible Preferred Stock as herein provided, such number of shares of Common Stock as shall then be issuable upon the conversion of all outstanding shares of Series D Convertible Preferred Stock. The Corporation covenants that all shares of Common Stock which shall be so issued shall be duly and validly issued and fully paid and nonassessable and free from all taxes, liens, preemptive rights and charges with respect to the issue thereof and, without limiting the generality of the foregoing, the Corporation will from time to time take all such action as may be requisite to assure that the par value per share of the Common Stock is at all times at a value which will not in any way restrict or limit the conversion of the Series D Convertible Preferred Stock. The Corporation will take all such action as may be necessary to assure that all such shares of Common Stock may be so issued without violation of any applicable law or regulation, or of any requirements of any national securities exchange upon which the Common Stock of the Corporation may be listed. The Corporation will not take any action which results in any adjustment of the Series D Conversion Price if the total number of shares of Common Stock issued and issuable after such action upon conversion of the Series D Convertible Preferred Stock would exceed the total number of shares of Common Stock authorized by the Certificate of Incorporation.

6. No Reissuance of Series D Convertible Preferred Stock. Shares of Series D Convertible Preferred Stock which are converted into shares of Common Stock as provided herein shall not be reissued.

7. Issue Tax. The issuance of certificates for shares of Common Stock upon conversion of the Series D Convertible Preferred Stock shall be made without charge to the holders thereof for any issuance tax in respect thereof, provided that the holders surrendering the certificates shall be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any certificate in a name other than that of the holder of the Series D Convertible Preferred Stock which is being converted.

8. Closing of Books. The Corporation will at no time close its transfer books against the transfer of any shares of Series D Convertible Preferred Stock or of any shares of Common Stock issued or issuable upon the conversion of any shares of Series D Convertible Preferred Stock in any manner which interferes with the timely conversion as provided herein of such Series D Convertible Preferred Stock.

9. Voting. Except as otherwise required by law or the Certificate of Incorporation, (a) the holders of Preferred Stock and the holders of Common Stock shall be entitled to notice of any stockholders meeting in accordance with the Bylaws of the Corporation and to vote upon any matter submitted to the stockholders for a vote as follows: (i) the holders of Preferred Stock shall have one vote for each full share of Common Stock into which their respective shares of Preferred Stock are convertible on the record date for the vote and (ii) the holders of Common Stock shall have one vote per share of Common Stock and (b) the holders of the Preferred Stock and the holders of Common Stock will vote as a single class on all matters.

10. Approvals of Certain Issuances. Without the consent of the majority of the holders of the Series D Convertible Preferred Stock, Series C Convertible Preferred Stock, Series B2 Convertible Preferred Stock, Series B Convertible Preferred Stock, and Series A Convertible Preferred Stock (the "Approving Classes"), voting together as a class on an as converted basis, the Corporation shall not: (i) establish a new series of Preferred Stock which ranks senior to or *pari passu* with the Series D Convertible Preferred Stock; (ii) issue Common Stock or Preferred Stock (other than Series D Excluded Shares) at a price or conversion price lower than the then-applicable Series D Conversion Price; (iii) issue options, warrants or rights to subscribe for shares of Common Stock, directly or indirectly, or issue any securities convertible into or exchangeable for shares of Common Stock, directly or indirectly, other than Series D Excluded Shares, for a consideration per share (determined by dividing the Net Aggregate Consideration (as determined pursuant to Section 4(f)(iii)(1)(A)) by the aggregate number of shares of Common Stock that would be issued if all such options, warrants, rights or convertible securities were exercised or converted to the fullest extent permitted by their terms) less than the then-applicable Series D Conversion Price; (iv) issue Capital Stock pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (v) issue Capital Stock pursuant to a joint venture or strategic alliance by the Corporation with another Person; or (vi) issue Capital Stock or warrants or options to acquire Capital Stock to Persons as partial consideration for debt financing or lease financing.

11. Definitions. As used in this Certificate of Designation, the following terms have the following meanings for purposes of this Certificate of Designation:

(a) “Capital Stock” means any capital stock of any class or series (however designated) of the Corporation.

(b) “First Issue Date” means the earliest date on which shares of the Series D Convertible Preferred Stock are first issued by the Corporation.

(c) “Person” means an individual, partnership, corporation, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

(d) “Reference Period” means the period beginning on the First Issue Date and terminating upon the twelve month anniversary of the First Issue Date.

(e) “Sale of the Corporation” means: (a) a merger or consolidation of the Corporation into or with any other Person or Persons who are not affiliates of the Corporation in which the stockholders of the Corporation immediately prior to such merger or consolidation possess less than a majority of the Corporation’s or the surviving entity’s issued and outstanding voting Capital Stock immediately after such merger or consolidation; (b) a single transaction or a series of transactions pursuant to which at least a majority of the issued and outstanding voting Capital Stock of the Corporation is acquired by a Person or group of affiliated Persons who did not hold (and whose affiliates did not hold) any of the issued and outstanding voting Capital Stock of the Corporation as of the First Issue Date; or (c) a single transaction or series of transactions pursuant to which a Person or Persons who are not affiliates of the Corporation acquire all or substantially all of the assets of the Corporation. Notwithstanding the foregoing, any offering by the Corporation of its Common Stock to the public pursuant to an effective registration statement under the Securities Act, or any comparable statement under any similar United States federal statute then in force having such an effect and any issuance of Capital Stock by the Corporation in a bona fide capital raising transaction having such an effect shall not be a “Sale of the Corporation” hereunder.

(f) “Series D Excluded Shares” means any (i) Capital Stock issued pursuant to the acquisition of another Person by the Corporation by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (ii) Capital Stock issued pursuant to a joint venture or strategic alliance by the Corporation with another Person; (iii) Capital Stock or warrants or options to acquire Capital Stock issued to Persons as partial consideration for debt financing or lease financing; (iv) shares of Common Stock, issued or issuable to any Person as an employee, director or officer of, or consultant or service provider to, the Corporation pursuant to a stock purchase or stock option plan or other employee stock arrangement of the Corporation and any shares of Common Stock issued upon the exercise thereof; (v) Capital Stock issued pursuant to the exercise or conversion of options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly, outstanding as of the date hereof; (vi) shares of the Corporation’s Capital Stock or options, warrants or rights to subscribe for shares of the Corporation’s Capital Stock, directly or indirectly approved for issuance by the holders of a majority of the then outstanding shares of Preferred Stock, voting together as a single class on an as-converted basis; (vii) securities issued in replacement of any securities issued pursuant to the preceding subsections; (viii) shares of Common Stock issued upon conversion or exchange of any Capital Stock; or (ix) the authorized but unissued shares of Series D Convertible Preferred Stock.

All capitalized terms used and not defined herein shall have the meanings given to them in the Amended and Restated Certificate of Incorporation of Vaccinex, Inc.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Vaccinex, Inc. has caused this Certificate to be signed by Maurice Zauderer, its President, this 22 day of May, 2017.

Vaccinex, Inc.

By: Maurice Zauderer
Name: Maurice Zauderer
Title: President and CEO

[Series D Convertible Preferred Stock Signature Page]

AMENDED AND RESTATED BYLAWS
OF
VACCINEX INC.

ARTICLE I
STOCKHOLDERS

Section 1. Annual Meeting. The annual meeting of the stockholders for the election of directors and for the transaction of such other business as may properly come before the meeting shall be held at such place, either within or without the State of Delaware, on such date and at such time as the Board of Directors may by resolution provide. The Board of Directors may specify by resolution prior to any special meeting of stockholders held within the year that such meeting shall be in lieu of the annual meeting.

Section 2. Special Meetings. Special meetings of the stockholders may be called at any time for any purpose or purposes by a majority of the Board of Directors, the Chairman of the Board, or the President, but no such special meetings may be called by any other person or persons. Special meetings shall be held at such place, either within or without the State of Delaware, as is stated in the call and notice thereof. Business transacted at any special meeting shall be limited to matters relating to the purpose or purposes stated in the notice of meeting.

Section 3. Notice of Meetings. Unless otherwise provided by law, whenever stockholders are required or permitted to take any action at a meeting, a written notice of the meeting stating the place, date and hour of the meeting, and, in the case of a special meeting, the purpose or purposes for which the meeting is called, shall be given not less than ten (10) nor more than sixty (60) days prior to such meeting to each stockholder entitled to vote at the meeting. If mailed, such notice shall be deemed to be given when deposited in the mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the records of the Corporation. Whenever notice is required to be given to any stockholder, a written waiver thereof, signed by the stockholder entitled to notice, whether before or after the time stated therein, shall be deemed equivalent to notice. Attendance at a meeting shall constitute a waiver of notice of such meeting, except when the stockholder attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business transacted at, nor the purpose of, any regular or special meeting need be stated in the written waiver of notice of such meeting.

Notice of any meeting may be given by the President, the Secretary or the person or persons calling such meeting. No notice need be given of the time and place of reconvening of any adjourned meeting if the time and place to which the meeting is adjourned are announced at the adjourned meeting. If the adjournment is for more than thirty (30) days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting.

Section 4. List of Stockholders. The officer who has charge of the stock ledger of the Corporation shall prepare and make, at least ten (10) days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, showing the address of each stockholder and the number of shares registered

in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least ten (10) days prior to the meeting, either at a place within the city where the meeting is to be held, which place shall be specified in the notice of the meeting, or, if not so specified, at the place where the meeting is to be held. The list shall also be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present. The stock ledger shall be the only evidence as to who are the stockholders entitled to examine the stock ledger, the list of stockholders or the books of the Corporation, or to vote in person or by proxy at any meeting of the stockholders.

Section 5. Quorum; Required Stockholder Vote. Except as otherwise provided by the Certificate of Incorporation, each stockholder entitled to vote at any meeting of stockholders shall be entitled to one vote for each share of stock held by such stockholder that has voting power upon the matter in question. A quorum for the transaction of business at any annual or special meeting of stockholders shall exist when the holders of a majority of the outstanding shares entitled to vote are represented either in person or by proxy at such meeting. If a quorum is present, in all matters other than the election of directors, the affirmative vote of a majority of the shares present in person or represented by proxy at the meeting and entitled to vote on the subject matter shall be the act of the stockholders, unless a greater vote is required by law, by the Certificate of Incorporation or by these Bylaws. If a quorum is present, directors shall be elected by the affirmative vote of a plurality of the shares present in person or represented by proxy at the meeting and entitled to vote on the election of directors. When a quorum is once present to organize a meeting, the stockholders present may continue to do business at the meeting or at any adjournment thereof notwithstanding the withdrawal of enough stockholders to leave less than a quorum. Shares of its own stock belonging to the Corporation or to another corporation, if a majority of the shares entitled to vote in the election of directors of such other corporation is held, directly or indirectly, by the Corporation, shall neither be entitled to vote nor be counted for quorum purposes; provided, however, that the foregoing shall not limit the right of the Corporation to vote stock, including but not limited to its own stock, held by it in a fiduciary capacity.

Section 6. Proxies. A stockholder may vote either in person or by a proxy which such stockholder has duly executed in writing. No proxy shall be valid after three years from the date of its execution unless a longer period is expressly provided in the proxy. A duly executed proxy shall be irrevocable if it states that it is irrevocable and if, and only as long as, it is coupled with an interest sufficient in law to support an irrevocable power. A stockholder may revoke any proxy which is not irrevocable by attending the meeting and voting in person or by filing an instrument in writing revoking the proxy or another duly executed proxy bearing a later date with the Secretary of the Corporation.

Section 7. Organization. Meetings of stockholders shall be presided over by the Chairman of the Board, if any, or in his absence by the President, or in his absence by a Vice President, or in the absence of the foregoing persons by a chairman designated by the Board of Directors, or in the absence of such designation by a chairman chosen at the meeting. The Secretary shall act as secretary of the meeting, but in his absence the chairman of the meeting may appoint any person to act as secretary of the meeting.

Section 8. Action of Stockholders Without Meeting. Unless otherwise provided in the Certificate of Incorporation, any action required to be, or which may be, taken at any annual or special meeting of stockholders, may be taken without a meeting, without prior notice and without a vote, if written consent, setting forth the action so taken, shall be signed and dated by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted. Prompt notice of the taking of corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing. Such consent shall have the same force and effect as an affirmative vote of the stockholders and shall be filed with the minutes of the proceedings of the stockholders.

Section 9. Record Date. In order that the Corporation may determine stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, or to express consent to corporate action in writing without a meeting, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for any other lawful purpose, the Board of Directors of the Corporation may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date: (a) in the case of the determination of stockholders entitled to vote at any meeting of stockholders or adjournment thereof, shall not be more than sixty (60) nor less than ten (10) days before the date of such meeting; (b) in the case of the determination of stockholders entitled to express consent to corporate action in writing without a meeting, shall not be more than ten (10) days after the date upon which the resolution fixing the record date is adopted by the Board of Directors; and (c) in the case of any other action, shall not be more than sixty (60) days prior to such other action. If no record date is fixed: (x) the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held; (y) the record date for determining stockholders entitled to express consent to corporate action in writing without a meeting when no prior action of the Board of Directors is required by law, shall be the first date on which a signed written consent setting forth the action taken or proposed to be taken is delivered to the Corporation in accordance with applicable law, or, if prior action by the Board of Directors is required by law, shall be at the close of business on the day on which the Board of Directors adopts the resolution taking such prior action; and (z) the record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

Section 10. Notice of Stockholder Business. At any meeting of the stockholders, only such business shall be conducted as shall have been properly brought before the meeting. To be properly brought before a meeting, business must be (a) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors, (b) otherwise properly brought before the meeting by or at the direction of the Board of Directors, or (c) otherwise properly brought before the meeting by a stockholder. For business to be properly

brought before a meeting by a stockholder, the stockholder must have given timely notice thereof in writing to the Secretary of the Corporation. To be timely, a stockholder's notice must be delivered to or mailed and received at the principal executive offices of the Corporation, not less than 60 days nor more than 90 days prior to the meeting; provided, however, that in the event that less than 60 days' notice or prior public disclosure of the date of the meeting is given or made to stockholders, notice by the stockholder to be timely must be so received not later than the close of business on the 10th day following the day on which such notice of the date of the meeting was mailed or such public disclosure was made. A stockholder's notice to the Secretary shall set forth as to each matter the stockholder proposes to bring before the meeting (a) a brief description of the business desired to be brought before the meeting and the reasons for conducting such business at the meeting, (b) the name and address, as they appear on the Corporation's books, of the stockholder proposing such business, (c) the class and number of shares of the Corporation which are beneficially owned by the stockholder, and (d) any material interest of the stockholder in such business. Notwithstanding anything in these Bylaws to the contrary, no business shall be conducted at any meeting except in accordance with the procedures set forth in this Section 10. The Chairman of the meeting shall, if the facts warrant, determine that business was not properly brought before the meeting in accordance with the provisions of this Section 10, and if he should so determine, he shall so declare to the meeting and any such business not properly brought before the meeting shall not be transacted.

Section 11. Notice of Stockholder Nominees. Only persons who are nominated in accordance with the procedures set forth in this Section 11 shall be eligible for election as Directors. Nominations of persons for election to the Board of Directors of the Corporation may be made at a meeting of stockholders by or at the direction of the Board of Directors or by any stockholder of the Corporation entitled to vote for the election of Directors at the meeting who complies with the notice procedures set forth in this Section 11. Such nominations, other than those made by or at the direction of the Board of Directors, shall be made pursuant to timely notice in writing to the Secretary of the Corporation. To be timely, a stockholder's notice shall be delivered to or mailed and received at the principal executive offices of the Corporation not less than 60 days nor more than 90 days prior to the meeting; provided, however, that in the event that less than 60 days' notice or prior public disclosure of the date of the meeting is given or made to stockholders, notice by the stockholder must be so received no later than the close of business on the 10th day following the day on which such notice of the date of the meeting was mailed or such public disclosure was made. Such stockholder' notice shall set forth (a) as to each person whom the stockholder proposes to nominate for election or re-election as a Director, (i) the name, age, business address and residence address of such person, (ii) the principal occupation or employment of such person, (iii) the class and number of shares of the Corporation which are beneficially owned by such person, and (iv) any other information relating to such person that is required to be disclosed in solicitations of proxies for election of Directors, or is otherwise required, in each case pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended (including, without limitation, a copy of such person's written consent to being named in any applicable proxy statement as a nominee and to serving as a Director if elected); and (b) as to the stockholder giving the notice, (i) the name and address, as they appear on the Corporation's books, of such stockholder and (ii) the class and number of shares of the Corporation which are beneficially owned by such stockholder. At the request of the Board of Directors, any person nominated by the Board of Directors for election as a Director shall furnish to the Secretary of the Corporation that information required to be set forth in a stockholder's

notice of nomination which pertains to the nominee. No person shall be eligible for election as a Director of the Corporation unless nominated in accordance with the procedures set forth in this Section 11. The Chairman of the meeting shall, if the facts warrant, determine that a nomination was not made in accordance with the procedure prescribed by this Section 11, and if he should so determine, he shall so declare to the meeting and the defective nomination shall be disregarded. Nothing in this Section I 1 shall be construed to effect the requirements for proxy statements of the Corporation under Regulation 14A of the Securities Exchange Act of 1934.

ARTICLE II
DIRECTORS

Section 1. Power of Directors. The business and affairs of the Corporation shall be managed by or under the direction of its Board of Directors, which may exercise all of the powers of the Corporation, subject to any restrictions imposed by law, by the Certificate of Incorporation or by these Bylaws.

Section 2. Composition of the Board; Tenure. The number of directors constituting the entire Board of Directors shall be not less than one (1) nor more than fifteen (15), and the exact number shall be fixed from time to time by the Board of Directors; provided, however, that the number of directors constituting the entire Board shall be two (2) until otherwise changed by the Board of Directors. No decrease in the number of directors shall shorten the term of any director at the time in office. Directors need not be residents of the State of Delaware or stockholders of the Corporation. Each director shall hold office until the next annual meeting and until his successor is elected and qualified, or until his earlier death, resignation or removal.

Section 3. Meetings of the Board; Notice of Meetings; Waiver of Notice. Regular meetings of the Board of Directors may be held at such places within or without the State of Delaware and at such times as the Board of Directors may from time to time determine, and if so determined, notices thereof need not be given. Special meetings of the Board of Directors may be held at such places within or without the State of Delaware and may be called by the President or two or more directors. Written notice of the time and place of such special meetings shall be given to each director by the persons calling such meeting by first class or registered mail at least four (4) days before the meeting or by telephone, telecopy or in person at least two (2) days before the meeting. Whenever notice is required to be given to any director, a written waiver thereof, signed by such director, whether before or after the time stated therein, shall be deemed equivalent to notice. Attendance at a meeting shall constitute a waiver of any required notice of such meeting, except when the director attends such meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any meeting of the Board of Directors need be stated in the notice or waiver of notice of such meeting.

Section 4. Quorum; Vote Requirement. A majority of the total number of directors shall constitute a quorum for the transaction of business at any meeting. When a quorum is present, the vote of a majority of the directors present shall be the act of the Board of Directors, unless a greater vote is required by law, by the Certificate of Incorporation or by these Bylaws.

Section 5. Organization. Meetings of the Board of Directors shall be presided over by the Chairman of the Board, if any, or in his absence by the President, or in their absence by a chairman chosen at the meeting. The Secretary shall act as secretary of the meeting, but in his absence the chairman of the meeting may appoint any person to act as secretary of the meeting.

Section 6. Action of Board without Meeting. Any action required or permitted to be taken at a meeting of the Board of Directors or any committee thereof may be taken without a meeting if written consent, setting forth the action so taken, is signed by all the directors or committee members and filed with the minutes of the proceedings of the Board of Directors or committee. Such consent shall have the same force and effect as a unanimous affirmative vote of the Board of Directors or committee, as the case may be.

Section 7. Resignations; Removal; Vacancies. Any director may resign at any time upon written notice to the Corporation. Any one or more or all of the directors may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors, except that the directors elected by the holders of a particular class or series of stock may be removed without cause only by vote of the holders of a majority of the outstanding shares of such class or series. Any newly created directorship or any vacancy occurring in the Board of Directors may be filled by the affirmative vote of a majority of the remaining directors, although such a majority is less than a quorum of the Board of Directors, or by a plurality of the votes cast at a meeting of the stockholders. A director elected to fill a vacancy shall serve for the unexpired term of his predecessor in office or until the next election of directors by the stockholders and the election and qualification of his successor.

Section 8. Conference Telephone Meetings. Unless the Certificate of Incorporation otherwise provides, members of the Board of Directors, or any committee designated by the Board of Directors, may participate in a meeting of the Board or any such committee by means of conference telephone or similar communications equipment by means of which all persons participating in the meeting can hear each other, and participation in a meeting pursuant to this Section 8 shall constitute presence in person at such meeting.

Section 9. Committees. The Board of Directors, by resolution passed by a majority of all of the directors, may designate one or more committees, each committee to consist of one or more of the directors. The Board may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of the committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in place of any such absent or disqualified member. Any such committee, to the extent provided in the resolution of the Board of Directors, shall have and may exercise all the power and authority of the Board of Directors in the management of the business and affairs of the Corporation, and may authorize the seal of the Corporation to be affixed to all papers which may require it; provided that no committee shall have the power or authority of the Board of Directors in reference to (a) amending the Certificate of Incorporation (except that a committee may, to the extent authorized in the resolution or resolutions providing for the issuance of shares of stock adopted by the Board of Directors as provided in Section 151(a) of the Delaware General Corporation Law fix the designations and any of the preferences or rights

of such shares relating to dividends, redemption, dissolution, any distribution of assets of the Corporation or the conversion into, or the exchange of such shares for, shares of any other class or classes or any other series of the same or any other class or classes of stock of the Corporation), (b) adopting an agreement of merger or consolidation under Sections 251 or 252 of the Delaware General Corporation Law, (c) recommending to the stockholders the sale, lease or exchange of all or substantially all of the property and assets of the Corporation, recommending to the stockholders a dissolution of the Corporation or a revocation thereof, or amending the Bylaws of the Corporation. In addition, unless the resolution of the Board of Directors or the Certificate of Incorporation expressly so provides, no such committee shall have the power or authority to declare a dividend, to authorize the issuance of stock, or to adopt a certificate of ownership and merger pursuant to Section 253 of the Delaware General Corporation Law. Unless the Board of Directors otherwise provides, each committee designated by the Board may make, alter and repeal rules for the conduct of its business. In the absence of such rules each committee shall conduct its business in the same manner as the Board of Directors conducts its business pursuant to this Article II.

ARTICLE III
OFFICERS

Section 1. Executive Structure of the Corporation. The officers of the Corporation shall be elected by the Board of Directors and shall consist of a Chairman of the Board of Directors, a President, Secretary and Chief Financial Officer and such other officers or assistant officers, including one or more Executive Vice Presidents, Senior Vice Presidents, Vice Presidents, Secretaries, Treasurers, Assistant Secretaries or Assistant Treasurers, or any other officers that the Board of Directors may establish, as may be elected by the Board of Directors. Each officer shall hold office for the term for which such officer has been elected or until such officer's successor is elected and qualified, or until such officer's earlier resignation, removal from office, or death. Any two or more offices may be held by the same person.

Section 2. Duties and Responsibilities. Each officer, employee and agent of the Corporation shall have such duties and authority as may be conferred upon such officer, employee or agent by the Board of Directors or delegated to such officer, employee or agent by the President.

Section 3. Resignations; Removal; Vacancies. Any officer may resign at any time upon written notice to the Corporation. The Board of Directors may remove any officer with or without cause at any time, but such removal shall be without prejudice to the contractual rights of such officer, if any, with the Corporation. Any vacancy occurring in any office of the Corporation by reason of death, resignation, removal or otherwise may be filled for the unexpired portion of the term by the Board of Directors at any regular or special meeting.

Section 4. Compensation. The salaries of the officers shall be fixed from time to time by the Board of Directors or by any officer designated by the Board. No officer shall be prevented from receiving such salary by reason of the fact that such officer is also a director of the Corporation.

ARTICLE IV
STOCK

Section 1. Stock Certificates. The shares of stock of the Corporation shall be represented by certificates, provided that the Board of Directors may by resolution provide that some or all of any or all classes or series of stock shall be uncertificated shares. Certificates shall be in such form as may be approved by the Board of Directors, which certificates shall be issued to stockholders of the Corporation in numerical order from the stock book of the Corporation, and each of which shall bear the name of the stockholder, the number of shares represented, and the date of issue; and which shall be signed by the President or a Vice President and the Secretary or an Assistant Secretary of the Corporation or any other officer authorized to sign by the Board of Directors; and which shall be sealed with the seal of the Corporation. Any or all of the signatures on the certificate may be a facsimile. In case any officer, transfer agent, or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if he were such officer, transfer agent or registrar at the date of issue.

Within a reasonable time after the issuance or transfer of uncertificated stock, the Corporation shall send to the registered owner thereof a written notice containing the information required to be set forth or stated on certificates pursuant to Section 151, 156, 202(a) or 218(a) of the Delaware General Corporation Law or a statement that the Corporation will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

Section 2. Transfer of Stock. Shares of stock of the Corporation shall be transferred only on the books of the Corporation upon surrender to the Corporation of the certificate or certificates representing the shares to be transferred accompanied by an assignment in writing of such shares properly executed by the stockholder of record or such stockholder's duly authorized attorney-in-fact and with all taxes on the transfer having been paid. The Corporation may refuse any requested transfer until furnished evidence satisfactory to it that such transfer is proper. Upon the surrender of a certificate for transfer of stock, such certificate shall at once be conspicuously marked on its face "Cancelled" and filed with the permanent stock records of the Corporation. Upon receipt of proper transfer instructions from the registered owner of uncertificated shares such uncertificated shares shall be cancelled and issuance of new equivalent uncertificated shares or certificated shares shall be made to the person entitled thereto and the transaction shall be recorded upon the books of the Corporation. The Board of Directors may make such additional rules concerning the issuance, transfer and registration of stock.

Section 3. Lost, Stolen or Destroyed Stock Certificates; Issuance of New Certificates. The Corporation may issue a new certificate of stock or uncertificated shares in the place of any certificate theretofore issued by it alleged to have been lost, stolen or destroyed, and the Corporation may require the owner of the lost, stolen or destroyed certificate, or his legal representative, to give the Corporation a bond sufficient to indemnify it against any claim that may be made against it on account of the alleged loss, theft or destruction of any such certificate or the issuance of such new certificate or uncertificated shares.

Section 4. Registered Stockholders. The Corporation may deem and treat the holder of record of any stock as the absolute owner for all purposes and shall not be required to take any notice of any right or claim of right of any other person.

ARTICLE V
DEPOSITORIES, SIGNATURES AND SEAL

Section 1. Depositories. All funds of the Corporation shall be deposited in the name of the Corporation in such bank, banks, or other financial institutions as the Board of Directors may from time to time designate and shall be drawn out on checks, drafts or other orders signed on behalf of the Corporation by such person or persons as the Board of Directors may from time to time designate.

Section 2. Contracts and Deeds. All contracts, deeds and other instruments shall be signed on behalf of the Corporation by the President or by such other officer, officers, agent or agents as the Board of Directors may provide from time to time by resolution.

Section 3. Seal. The Board of Directors shall provide for a suitable seal, which seal shall be in the charge of the Secretary.

ARTICLE VI
INDEMNIFICATION

Section 1. Right to Indemnification. The Corporation shall indemnify and hold harmless, to the fullest extent permitted by applicable law as it presently exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than said law permitted the Corporation to provide prior to such amendment), any person who was or is made a party or is threatened to be made a party to or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (hereinafter a “Proceeding”), by reason of the fact that he or she, or a person for whom he or she is the legal representative, is or was a director or officer of the Corporation or is or was serving at the request of the Corporation as a director or officer of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity, including service with respect to employee benefit plans, against all expense, liability and loss (including attorneys’ fees, judgments, fines, ERISA excise taxes or penalties and amounts to be paid in settlement) reasonably incurred by such person in connection therewith and such indemnification shall continue as to a person who has ceased to be a director or officer of the Corporation (or other entity) and shall inure to the benefit of his or her heirs, executors and administrators. The Corporation shall be required to indemnify a person in connection with a proceeding (or part thereof) initiated by such person only if such proceeding (or part thereof) was authorized by the Board of Directors of the Corporation.

Section 2. Power of Indemnification. The Corporation shall have the power to indemnify and hold harmless, to the fullest extent permitted by applicable law as it presently exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than said law permitted the Corporation to provide prior to such amendment), any person who was or is

made a party or is threatened to be made a party to or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (hereinafter a "Proceeding"), by reason of the fact that he or she, or a person for whom he or she is the legal representative, is or was an employee or agent of the Corporation or is or was serving at the request of the Corporation as an employee or agent of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity, including service with respect to employee benefit plans, against all expense, liability and loss (including attorneys' fees, judgments, fines, ERISA excise taxes or penalties and amounts to be paid in settlement) reasonably incurred by such person in connection therewith and such indemnification may be continued as to a person who has ceased to be an employee or agent of the Corporation (or other entity) and shall inure to the benefit of his or her heirs, executors and administrators.

Section 3. Prepayment of Expenses. The Corporation may pay the expenses incurred in defending any proceeding in advance of its final disposition; provided, however, that, if the Delaware General Corporation Law requires, the payment of such expenses incurred by a director or officer in his or her capacity as a director or officer (and not in any other capacity in which service was or is rendered by such person while a director or officer, including, without limitation, service to an employee benefit plan) in advance of the final disposition of the proceeding shall be made only upon delivery to the Corporation of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified under this Article VI or otherwise.

Section 4. Payment of Indemnification. If a claim for indemnification or payment of expenses under this Article VI is not paid in full by the Corporation within 90 days after a written claim therefor has been received by the Corporation, the claimant may at any time thereafter file suit against the Corporation to recover the unpaid amount of the claim and, if successful in whole or in part, shall be entitled to be paid also the expense of prosecuting such claim. In any such action the Corporation shall have the burden of proving that the claimant was not entitled to the requested indemnification or payment of expenses under applicable law.

Section 5. Indemnification Not Exclusive. The right to indemnification and the payment of expenses incurred in defending a proceeding in advance of its final disposition conferred in this Article VI shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provision of the Certificate of Incorporation, these Bylaws, agreement, vote of stockholders or disinterested directors or otherwise.

Section 6. Insurance. The Corporation may maintain insurance, at its expense, to protect itself and any director or officer of the Corporation or another corporation, partnership, joint venture, trust or other enterprise against any expense, liability or loss, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the Delaware General Corporation Law.

Section 7. Other Indemnification. The Corporation's obligation, if any, to indemnify any person who was or is serving at its request as a director or officer of another corporation, partnership, joint venture, trust, enterprise or non-profit entity shall be reduced by any amount such person may collect as indemnification from such other corporation, partnership, joint venture, trust, enterprise or non-profit enterprise.

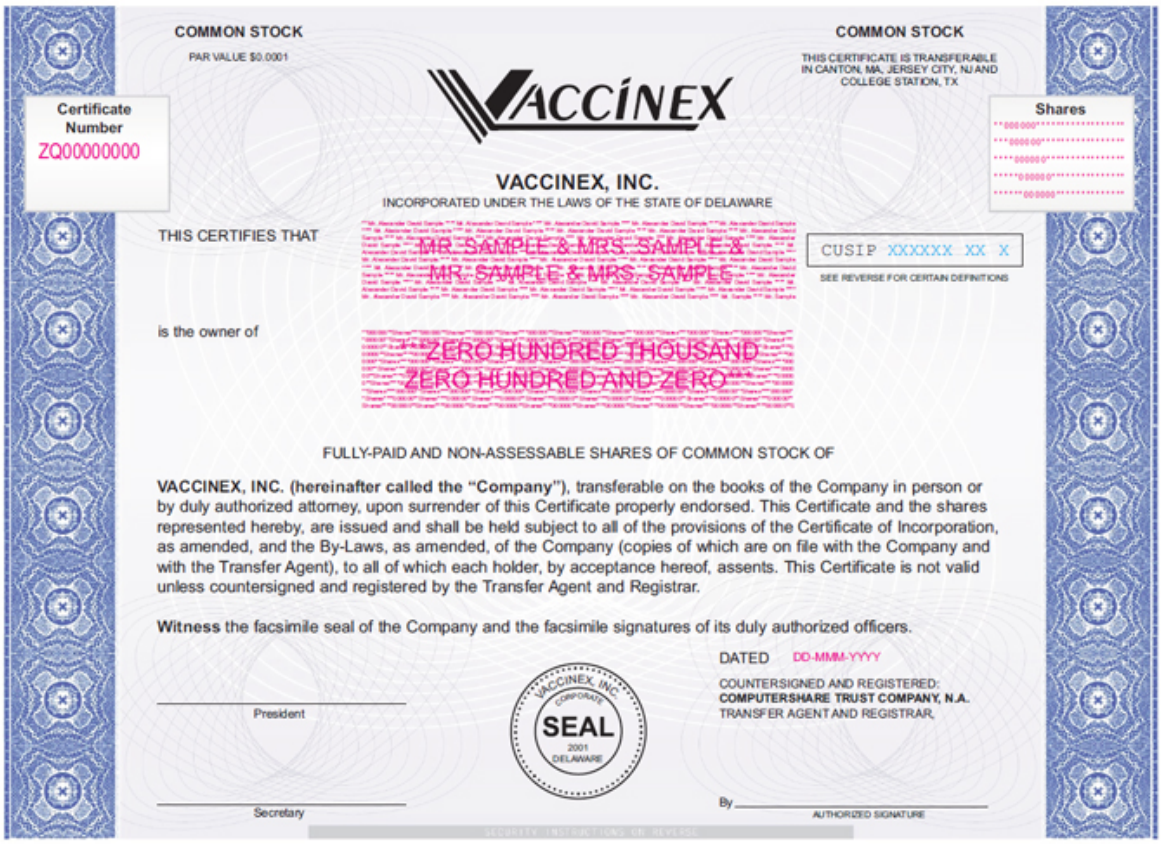
Section 8. Amendment or Repeal. Any repeal or modification of the foregoing provisions of this Article VI shall not adversely affect any right or protection hereunder of any person in respect of any act or omission occurring prior to the time of such repeal or modification.

ARTICLE VII
AMENDMENT OF BYLAWS

These Bylaws may be altered, amended or repealed as specified in the Certificate of Incorporation.

Bylaws dated 03-06-03

ZQ|CERT#|COY|CLS|RGSTRY|ACCT#|TRANSTYPE|RUN#|TRANS#



COMMON STOCK

PAR VALUE $0.0001

COMMON STOCK

THIS CERTIFICATE IS TRANSFERABLE IN CANTON, MA, JERSEY CITY, NJ AND COLLEGE STATION, TX

Certificate Number

ZQ00000000

Shares

VACCINEX, INC.

INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE

THIS CERTIFIES THAT

MR SAMPLE & MRS. SAMPLE & MR. SAMPLE & MRS. SAMPLE

CUSIP XXXXXX XX X

SEE REVERSE FOR CERTAIN DEFINITIONS

is the owner of

ZERO HUNDRED THOUSAND ZERO HUNDRED AND ZERO

FULLY-PAID AND NON-ASSESSABLE SHARES OF COMMON STOCK OF

VACCINEX, INC. (hereinafter called the "Company"), transferable on the books of the Company in person or by duly authorized attorney, upon surrender of this Certificate properly endorsed. This Certificate and the shares represented hereby, are issued and shall be held subject to all of the provisions of the Certificate of Incorporation, as amended, and the By-Laws, as amended, of the Company (copies of which are on file with the Company and with the Transfer Agent), to all of which each holder, by acceptance hereof, assents. This Certificate is not valid unless countersigned and registered by the Transfer Agent and Registrar.

Witness the facsimile seal of the Company and the facsimile signatures of its duly authorized officers.

DATED DD-MMM-YYYY

President

Secretary

VACCINEX, INC. CORPORATE SEAL 2001 DELAWARE

COUNTERSIGNED AND REGISTERED:
COMPUTERSHARE TRUST COMPANY, N.A.
TRANSFER AGENT AND REGISTRAR,

By _____
AUTHORIZED SIGNATURE

SECURITY INSTRUCTIONS ON REVERSE

1234567

VACCINEX

PO BOX 43004, Providence, RI 02940-3004

MR A SAMPLE
DESIGNATION (IF ANY)
ADD 1
ADD 2
ADD 3
ADD 4

CUSIP XXXXXX XX X
Holder ID XXXXXXXXXX
Insurance Value 1,000,000.00
Number of Shares 123456
DTC 12345678 1234567890123456

Certificate Numbers	Num/No.	Denom.	Total
1234567890123456789	1	1	1
1234567890123456789	2	2	2
1234567890123456789	3	3	3
1234567890123456789	4	4	4
1234567890123456789	5	5	5
1234567890123456789	6	6	6
Total Transaction			7

VACCINEX, INC.

THE COMPANY WILL FURNISH WITHOUT CHARGE TO EACH SHAREHOLDER WHO SO REQUESTS, A SUMMARY OF THE POWERS, DESIGNATIONS, PREFERENCES AND RELATIVE, PARTICIPATING, OPTIONAL OR OTHER SPECIAL RIGHTS OF EACH CLASS OF STOCK OF THE COMPANY AND THE QUALIFICATIONS, LIMITATIONS OR RESTRICTIONS OF SUCH PREFERENCES AND RIGHTS, AND THE VARIATIONS IN RIGHTS, PREFERENCES AND LIMITATIONS DETERMINED FOR EACH SERIES, WHICH ARE FIXED BY THE CERTIFICATE OF INCORPORATION OF THE COMPANY, AS AMENDED, AND THE RESOLUTIONS OF THE BOARD OF DIRECTORS OF THE COMPANY, AND THE AUTHORITY OF THE BOARD OF DIRECTORS TO DETERMINE VARIATIONS FOR FUTURE SERIES. SUCH REQUEST MAY BE MADE TO THE OFFICE OF THE SECRETARY OF THE COMPANY OR TO THE TRANSFER AGENT. THE BOARD OF DIRECTORS MAY REQUIRE THE OWNER OF A LOST OR DESTROYED STOCK CERTIFICATE, OR HIS LEGAL REPRESENTATIVES, TO GIVE THE COMPANY A BOND TO INDEMNIFY IT AND ITS TRANSFER AGENTS AND REGISTRARS AGAINST ANY CLAIM THAT MAY BE MADE AGAINST THEM ON ACCOUNT OF THE ALLEGED LOSS OR DESTRUCTION OF ANY SUCH CERTIFICATE.

The following abbreviations, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

TEN COM	- as tenants in common	UNIF GIFT MIN ACT	-.....(Cust).....Custodian.....(Minor).....
TEN ENT	- as tenants by the entireties		under Uniform Gifts to Minors Act.....(State).....
JT TEN	- as joint tenants with right of survivorship and not as tenants in common	UNIF TRF MIN ACT	-.....(Cust).....Custodian (until age .....)
			.....(Minor).....under Uniform Transfers to Minors Act .....(State).....

Additional abbreviations may also be used though not in the above list.

PLEASE INSERT SOCIAL SECURITY OR OTHER IDENTIFYING NUMBER OF ASSIGNEE

For value received, _____ hereby sell, assign and transfer unto

_____

(PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS, INCLUDING POSTAL ZIP CODE, OF ASSIGNEE)

_____

_____

_____ Shares

of the common stock represented by the within Certificate, and do hereby irrevocably constitute and appoint

_____ Attorney

to transfer the said stock on the books of the within-named Company with full power of substitution in the premises.

Dated: _____ 20____

Signature: _____

Signature: _____

Notice: The signature to this assignment must correspond with the name as written upon the face of the certificate, in every particular, without alteration or enlargement, or any change whatever.

Signature(s) Guaranteed: Medallion Guarantee Stamp

THE SIGNATURE(S) SHOULD BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (Banks, Stockbrokers, Savings and Loan Associations and Credit Unions) WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION PROGRAM, PURSUANT TO S.E.C. RULE 17Ad-15.

SECURITY INSTRUCTIONS

THIS IS WATERMARKED PAPER. DO NOT ACCEPT WITHOUT NOTING WATERMARK. HOLD TO LIGHT TO VERIFY WATERMARK.

The IRS requires that the named transfer agent ("we") report the cost basis of certain shares or units acquired after January 1, 2011. If your shares or units are covered by the legislation, and you requested to sell or transfer the shares or units using a specific cost basis calculation method, then we have processed as you requested. If you did not specify a cost basis calculation method, then we have defaulted to the first in, first out (FIFO) method. Please consult your tax advisor if you need additional information about cost basis.

If you do not keep in contact with the issuer or do not have any activity in your account for the time period specified by state law, your property may become subject to state unclaimed property laws and transferred to the appropriate state.

1234567

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

This First Amended and Restated Investor Rights Agreement (the "Agreement") is made and entered into as of August 22, 2003 among Vaccinex, Inc., a Delaware corporation (the "Company"), and those persons listed on **Schedule A** hereto.

RECITALS

The Company and certain Investors entered into an Investor Rights Agreement dated as of November 18, 2002 (the "Original Agreement") and the Company and such certain Investors desire to amend and restate such Original Agreement in its entirety.

This Agreement is entered into in connection with certain Investors' purchase of shares of the Company's Series B Convertible Preferred Stock. The amendment and restatement and the execution and delivery of this Agreement are conditions precedent to such certain Investors' obligations to purchase such shares.

The parties to the Subscription Agreement dated May 21, 2001 among the Company, Maurice Zauderer, Zauderer Family Trust, Louis Zauderer, Deepak M. Sahasrabudhe, Vaccinex (Ontario), L.P., and Trust fbo Pan Atlantic Bank & Trust Ltd and other Investors desire to terminate Section 3(c) thereof.

NOW, THEREFORE, the parties to this Agreement hereby agree as follows:

ARTICLE I

DEFINITIONS

The following terms shall have the meanings set forth in this Article I:

"Agreement" has the meaning given such term in the paragraph first above.

"Board" means the Company's board of directors and any duly designated committees thereof, as may be appropriate.

"Commission" means the U.S. Securities and Exchange Commission or any successor governmental agency that administers the Securities Act and the Exchange Act.

"Commission Form S-3" has the meaning specified in Section 2.1(b).

"Common Stock" means the Common Stock, par value $.0001 per share, of the Company, as constituted on the date hereof, any shares of the Company's capital stock into which such Common Stock shall be changed, and any shares of the Company's capital stock resulting from any reclassification of such Common Stock or recapitalization of the Company.

"Company Securities" means without limitation, Common Stock, Series A Preferred Stock, Series B Preferred Stock and any other preferred stock or capital stock of the Company and options, warrants or other rights to subscribe for or purchase Common Stock, Series A Preferred Stock, Series B Preferred Stock or any other preferred stock or capital stock of the Company and notes or other obligations that are directly or indirectly, exercisable for, convertible into or exchangeable for Common Stock, Series A Preferred Stock, Series B Preferred Stock or any other preferred stock or capital stock of the Company.

"Conversion Stock" means Common Stock issued or issuable upon the conversion of shares of the Company's Series A Preferred Stock and the Company's Series B Preferred Stock.

"Exchange Act" means the Securities Exchange Act of 1934, as amended, or any successor statute thereto, and the rules and regulations of the Commission promulgated from time to time thereunder, all as the same shall be in effect at the time.

"Family Member" means, as applied to any individual, such individual's spouse, children (including stepchildren or adopted children), grandchildren, parents or siblings thereof, and any trust or other estate planning vehicle created for the primary benefit of any one or more of them.

"Founders" means, collectively, Dr. Maurice Zauderer and Dr. Deepak Sahasrabudhe and a "Founder" means either one of them.

"Founder Stock" means the Common Stock held by each of the Founders, Vaccinex (Ontario), L.P. and the Zauderer Family Trust.

"Fully Diluted Basis" means at any time the sum of (x) the number of issued and outstanding shares of Common Stock at such time, whether or not vested, plus (y) the total number of shares of Common Stock, whether or not vested, issuable upon the exercise, exchange or conversion of all Company Securities issued and outstanding at such time whether or not such Company Securities are exercisable, convertible or exchangeable at such time.

"Holders" means, collectively, the Investors, the Series A Holders, the Founders and any common stockholder identified in **Schedule A**, and "Holder" means any one of them.

"Incidental Registration" has the meaning specified in Section 2.2.

"Incidental Registration Cutback" has the meaning specified in Section 2.2(b) of this Agreement.

"Indemnified Parties" has the meaning specified in Section 5.1 of this Agreement.

"Indemnifying Party" has the meaning specified in Section 5.1 of this Agreement.

"Investors" means (i) the Persons designated as such on **Schedule A** hereto and (ii) any other Person holding Registrable Securities to whom any such Person so designated assigns the registration rights contemplated hereby pursuant to Article VII of this Agreement and in the case of (i) or (ii) provided such Person signs a counterpart to this Agreement.

"Majority Preferred Stock Holders" means at any time the holders of a majority of the Series A Registrable Securities and Series B Registrable Securities determined on a Fully Diluted Basis.

"Majority Investors" means at any time the holders of a majority of the Registrable Securities held by all of the Investors determined on a Fully Diluted Basis.

"New Securities" means all Company Securities issued after the date of this Agreement, except for: (i) Company Securities offered pursuant to a Qualified Public Offering; (ii) Company Securities issued to non-affiliates of the Company in consideration of the acquisition of another Person or business by the Company by merger, consolidation, amalgamation, exchange of shares, the purchase of substantially all of the assets or otherwise; (iii) Company Securities issued to any members of the Board or employees of the Company or other providers of services to the Company pursuant to any incentive stock plan or other form of incentive compensation approved by the Board and Company Securities issued upon the exercise of any such Company Securities, provided that the per share exercise price or per share purchase price, as the case may be, of such Company Securities is not less than the fair market value of a share of such Company Securities at the time of grant or issue of such Company Securities, as the case may be, as determined by the Board in its sole discretion; (iv) Company Securities issued to the Company's stockholders upon any stock split, stock dividend, combination or other similar event with respect to the Common Stock; (v) Company Securities issued as so-called equity kickers as part of an offering of debt securities by the Company, provided that, in the good faith judgment of the Board, such Company Securities are not the principal pricing feature of such debt offering; (vi) Company Securities issued pursuant to any Subscription Agreement and Company Securities issued upon conversion of such Company Securities; (vii) shares of Company Securities issued to non-affiliates of the Company in conjunction with joint ventures, strategic partnerships or licenses; (viii) Company Securities issuable upon conversion or exercise of any Company Securities outstanding as of the date of this Agreement; and (ix) Company Securities issued subsequent to the date of this Agreement in compliance with Article VII of this Agreement.

"Person" shall mean an individual, partnership, corporation, limited liability company, association, trust, joint venture, unincorporated organization and any government, governmental department or agency or political subdivision thereof.

"Preferred Stock Holders" means Holders who hold Series A Registrable Securities or Series B Registrable Securities, and "Preferred Stock Holder" means any one of them.

"Qualified Holder" means an Preferred Stock Holder, as the case may be, that can establish to the Company's satisfaction that such Preferred Stock Holder, as the case may be, is at the time of both the offer and issuance of New Securities an "accredited investor" within the meaning of Rule 501 of the Securities Act and otherwise possesses qualifications such that the Company may offer and issue New Securities to such Preferred Stock Holder, as the case may be, in compliance with an available exemption from the registration requirements pertaining thereto under the Securities Act and other federal, state and foreign securities laws and regulations.

"Qualified Public Offering" means an underwritten offering by the Company of its Common Stock to the public pursuant to an effective registration statement under the Securities Act or any comparable statement under any similar federal statute then in force, (other than an offering of shares being issued as consideration in a business acquisition or combination or an offering in connection with an employee benefit plan) (A) resulting in at least $15,000,000 of proceeds to the Company, before underwriting discounts and commissions and offering expenses, (B) reflecting a gross offering price per share of Common Stock (as equitably adjusted to reflect any stock split, stock dividend, combination, reorganization, recapitalization, reclassification or other similar event involving Common Stock) of not less than an amount equal to the then current Series B Conversion Price (as defined in the Company's Certificate of Incorporation) multiplied by two (2), and (C) after giving effect to which the Company's Common Stock is listed on a U.S. national securities exchange or admitted for quotation on the Nasdaq National Market or a successor thereto.

"Registrable Securities" means the following (in each case as adjusted for stock splits, recapitalizations and other similar events): (i) the Conversion Stock; (ii) any Common Stock or other securities issued or issuable with respect to the Conversion Stock pursuant to any stock split, stock dividend, recapitalization, or similar event; (iii) any Common Stock held by the Preferred Stock Holders; (iv) any Founder Stock; (v) securities issued in replacement or exchange of any of the securities issued in clauses (i), (ii), (iii) or (iv) above; *provided*, however, that any and all shares described in clauses (i)-(v) above shall cease to be Registrable Securities upon any sale pursuant to a registration statement under the Securities Act, Section 4(1) of the Securities Act or Rule 144 promulgated under the Securities Act, or any sale, transfer or assignment in any manner to any Person who is not entitled to the rights provided by this Agreement, *provided*, however, Registrable Securities shall cease to be Registrable Securities with respect to a Holder, when such Holder is eligible to sell or transfer free of restrictive legends all of such Holder's Registrable Securities pursuant to Rule 144(k) promulgated under the Securities Act in any three month period taking into account any applicable aggregation rules pursuant to Rule 144(e).

"Registration Expenses" means all expenses incident to the Company's performance of or compliance with this Agreement in connection with each Requested Registration or Incidental Registration, including, without limitation, all registration, filing, listing and National Association of Securities Dealers, Inc. ("NASD") fees, all fees and expenses of complying with securities or blue sky laws, all word processing, duplicating and printing expenses, all messenger and delivery expenses, any transfer taxes, the fees and expenses of the Company's legal counsel and independent public accountants, the reasonable fees and disbursements of one counsel for all Holders participating in each such registration, and any fees and disbursements of underwriters customarily paid by issuers or sellers of securities; *provided*, however, that Registration Expenses shall not include underwriting discounts and commissions.

"Requested Registration" has the meaning specified in Section 2.1(b) of this Agreement.

"Requested Registration Cutback" has the meaning specified in Section 2.1(c) of this Agreement.

"S-1 Registration" has the meaning specified in Section 2.1(a) of this Agreement.

"S-1 Registration Notice" has the meaning specified in Section 2.1(a) of this Agreement.

"S-1 Registration Request" has the meaning specified in Section 2.1(a) of this Agreement.

"S-3 Registration" has the meaning specified in Section 2.1(b) of this Agreement.

"S-3 Registration Notice" has the meaning specified in Section 2.1(b) of this Agreement.

"S-3 Registration Request" has the meaning specified in Section 2.1(b) of this Agreement.

"Securities Act" means the Securities Act of 1933, as amended, or any successor statute thereto, and the rules and regulations of the Commission promulgated from time to time thereunder, all as the same shall be in effect at the time.

"Series A Holders" means the holders of Series A Registrable Securities.

"Series A Preferred Stock" means the Company's Series A Convertible Preferred Stock, par value $.001 per share.

"Series A Registrable Securities" the following (in each case as adjusted for stock splits, recapitalizations and other similar events): (i) the Conversion Stock received by the Preferred Stock Holders upon conversion of the Series A Preferred Stock held by such Preferred Stock Holders; (ii) any Common Stock or other securities issued or issuable with respect to such Conversion Stock pursuant to any stock split, stock dividend, recapitalization, or similar event; (iii) securities issued in replacement or exchange of any of the securities issued in clauses (i) or (ii) above; *provided*, however, that any and all shares described in clauses (i)-(iii) above shall cease to be Series A Registrable Securities upon any sale pursuant to a registration statement under the Securities Act, Section 4(1) of the Securities Act or Rule 144 promulgated under the Securities Act, or any sale, transfer or assignment in any manner to any Person who is not entitled to the rights provided by this Agreement, *provided*, however, Series A Registrable Securities shall cease to be Series A Registrable Securities with respect to a Preferred Stock Holder, when such Preferred Stock Holder is eligible to sell or transfer free of restrictive legends all of such Preferred Stock Holder's Series A Registrable Securities pursuant to Rule 144(k) promulgated under the Securities Act in any three month period taking into account any applicable aggregation rules pursuant to Rule 144(e).

"Series B Preferred Stock" means the Company's Series B Convertible Preferred Stock, par value $.001 per share.

"Series B Registrable Securities" the following (in each case as adjusted for stock splits, recapitalizations and other similar events): (i) the Conversion Stock received by the Preferred Stock Holders upon conversion of the Series B Preferred Stock held by such Preferred Stock Holders; (ii) any Common Stock or other securities issued or issuable with respect to such Conversion Stock pursuant to any stock split, stock dividend, recapitalization, or similar event; and (iii) securities issued in replacement or exchange of any of the securities issued in clauses (i) or (ii) above; *provided*, however, that any and all shares described in clauses (i)-(iii) above shall cease to be Series B Registrable Securities upon any sale pursuant to a registration statement under the Securities Act, Section 4(1) of the Securities Act or Rule 144 promulgated under the Securities Act, or any sale, transfer or assignment in any manner to any Person who is not entitled to the rights provided by this Agreement, *provided*, however, Series B Registrable Securities shall cease to be Series B Registrable Securities with respect to a Preferred Stock Holder, when such Preferred Stock Holder is eligible to sell or transfer free of restrictive legends all of such Preferred Stock Holder's Series B Registrable Securities pursuant to Rule 144(k) promulgated under the Securities Act in any three month period taking into account any applicable aggregation rules pursuant to Rule 144(e).

"Subscription Agreement" means any subscription agreement executed and delivered to the Company by an Investor and accepted and executed by the Company in connection with (a) the Company's Confidential Private Placement Memorandum dated August 31, 2002 (as may be amended, restated or supplemented from time to time by the Company), (b) the Company's Confidential Private Placement Memorandum dated March 28, 2003 (as may be amended, restated or supplemented from time to time by the Company) or (c) any other similar Company confidential private placement memoranda distributed by the Company in connection with the sale and issuance of Series B Preferred Stock for a per share purchase price of $2.15.

"Underwriter's Maximum Number" has the meaning specified in Section 2.1(c) of this Agreement.

In addition, all references to "dollars" and "$" shall be deemed to refer to the lawful currency of the United States of America.

ARTICLE II

REGISTRATIONS

SECTION 2.1 **Requested Registrations**.

(a) Registrations on Form S-1.

(i) Request for S-1 Registration. Subject to Section 2.1(a)(ii), if at any time after one hundred eighty (180) days following the effective date of the Company's initial public offering of equity securities, the Company shall receive a written request from the Majority Preferred Stock Holders (a "S-1 Registration Request") that the Company effect the registration under the Securities Act of all or any portion of the Registrable Securities (an "S-1 Registration"), then the Company shall (x) promptly, and in any event within ten (10) days, give written notice of the proposed registration to all other Preferred Stock Holders ("S-1 Registration Notice"), and (y) use its best efforts to effect the registration under the Securities Act of the Registrable Securities that the Company has been so requested to register on behalf of the Majority Preferred Stock Holder(s) and any Preferred Stock Holder joining in such request (as is specified in a written request by each such Preferred Stock Holder received by the Company within twenty (20) days after delivery of the S-1 Registration Notice) in accordance herewith within sixty (60) days after the receipt of the S-1 Registration Request. Subject to Section 2.1(c), the Company may include in such S-1 Registration other securities of the Company for sale, for the Company's account or for the account of any other person.

(ii) Limitations on S-1 Registrations.

(1) Offering Price Limitation. The Company shall not be obligated to effect an S-1 Registration pursuant to this Section 2.1(a) unless the anticipated aggregate offering price of the Registrable Securities to be sold pursuant thereto is at least $10,000,000;

(2) Limitation on the Number of S-1 Registrations. The Company shall not be obligated to effect more than one (1) S-1 Registration hereunder, provided each such registration has been declared or ordered and kept effective for the time period indicated in Article III(a)(iii) below, and provided further that no S-I Registration shall count against the limit set forth in this Section 2(a)(ii)(2) unless, following the Requested Registration Cutback (as defined in Section 2.1(c)), the Preferred Stock Holders submitting the S-1 Registration Request and joining in the S-1 Registration Request are able to register at least fifty percent (50%) of the aggregate number of Registrable Securities included in the S-1 Registration Request and the subsequent requests by Preferred Stock Holders to join such S-1 Registration Request.

(3) Alternative S-3 Registration. The Company shall, if permitted by law, effect any registration requested under Section 2.1(a) by the filing of a registration statement on Commission Form S-3 pursuant to Section 2.1(b).

(4) Recent Registration Limitation. If the Company has effected a Requested Registration within the preceding one hundred eighty (180) days and such registration has been declared or ordered effective, the Company shall have the right to defer such Requested Registration for a period of not more than ninety (90) days after receipt of the request of the Preferred Stock Holders, provided that such right to delay a Requested Registration shall be exercised by the Company not more than once in any twelve (12) month period.

(5) Delay Limitation. If the Company shall furnish to the Majority Preferred Stock Holders requesting the S-1 Registration, a certificate signed by the Company's Chief Executive Officer or Chairman of the Board stating that in the good faith judgment of the Board such registration at the time requested would be detrimental to the Company and its stockholders, the Company shall have the right to defer such requested registration for a period of not more than ninety (90) days after receipt of the request of the Majority Preferred Stock Holders, provided that such right to delay a request shall be exercised by the Company not more than once in any twelve (12) month period.

(6) Simultaneous Company Registration Limitation. During the period starting with the date of the filing of, and ending on a date one hundred eighty (180) days following the effective date of, a Company-initiated registration on Form S-1 pertaining to the initial Qualified Public Offering of securities of the Company, the Company shall not be obligated to effect a registration under this Section 2.1 unless otherwise consented to by the underwriter of such offering and only if the Company is actively employing in good faith all reasonable efforts to cause such registration statement to become and remain effective.

(7) Termination. The right to request an S-1 Registration shall terminate on the third anniversary of the Company's initial Qualified Public Offering.

(b) Registrations on Form S-3.

(i) Request for S-3 Registration. Subject to Section 2.2(b)(ii), if at any time after the Company is a registrant entitled to file a registration statement on Form S-3 or any successor or similar short-form registration statement promulgated by the Commission (collectively, "Commission Form S-3"), the Company shall receive a written request from the Majority Preferred Stock Holders (an "S-3 Registration Request") that the Company effect the registration under the Securities Act of all or part of the Registrable Securities (an "S-3 Registration", and together with S-1 Registration, a "Requested Registration"), then the Company shall (x) promptly, and in any event within ten (10) days, give written notice of the proposed registration to all other Preferred Stock Holders (an "S-3 Registration Notice"), and (y) use its best efforts to effect the registration under the Securities Act of the Registrable Securities that the Company has been so requested to register on behalf of the requesting Majority Preferred Stock Holder(s) and any Preferred Stock Holder joining in such request (as is specified in a written request by each such Preferred Stock Holder received by the Company within fifteen (15) days after delivery of the S-3 Registration Notice) in accordance herewith within thirty (30) days after receipt of the S-3 Registration Request. Subject to Section 2.1(c), the Company may include in such S-3 Registration other securities of the Company for sale, for the Company's account or for the account of any other person.

As an alternative to filing a series of registration statements on Commission Form S-3, the Company may fulfill its obligations under this Section 2.1(b) by filing and causing to be declared effective under Rule 415 one registration statement on Form S-3 covering all of the Registrable Securities.

(ii) Limitations on S-3 Registrations.

(1) Offering Price Limitation. The Company shall not be obligated to effect an S-3 Registration pursuant to this Section 2.1(b) unless the anticipated aggregate offering price of the Registrable Securities to be sold pursuant thereto is at least $5,000,000.

(2) Limitation on the Number of S-3 Registrations. The Company must effect an unlimited number of S-3 Registrations pursuant to this Section 2.1(b).

(3) Multiple Simultaneous S-3 Limitation. The Company shall not be obligated to keep effective at any one time more than three Commission Form 5-3 registration statements in accordance with this Section 2.1(b), and if the Company is requested to effect an additional S-3 Registration at a time when it is keeping three such registration statements effective, it may delay effecting such S-3 Registration until it is no longer required in accordance with Article III(a)(iii) to keep effective one (or more) of the then effective Commission Form S-3 registration statements.

(4) Recent Registration Limitation. The Company shall not be obligated to effect an S-3 Registration pursuant to this Section 2.1(b) if the Company has effected a Requested Registration within the preceding one hundred eighty (180) days, and such registration has been declared or ordered effective.

(5) Delay Limitation. If the Company shall furnish to the Majority Preferred Stock Holders requesting the S-3 Registration a certificate signed by the Company's Chief Executive Officer or Chairman of the Board stating that in the good faith judgment of the Board such registration at the time requested would be detrimental to the Company and its stockholders for such S-3 Registration to be effected at such time, the Company shall have the right to defer such filing for a period of not more than ninety (90) days after receipt of the request of the Majority Preferred Stock Holders, provided that such right to delay a request shall be exercised by the Company not more than once in any twelve (12)-month period.

(6) Termination. The rights to request a S-3 Registration shall terminate on the third anniversary of the Company's initial Qualified Public Offering.

(c) Priority in Registration. If a Requested Registration is an underwritten offering, and the managing underwriters shall give written advice to the Majority Preferred Stock Holders and the Company that, in their opinion, market conditions dictate that no more than a specified maximum number of securities (the "Underwriter's Maximum Number") could successfully be included in such registration within a price range acceptable to the Majority Preferred Stock Holders initiating the Requested Registration, then the Company shall be required to include in such registration only such number of securities as is equal to the Underwriter's Maximum Number ("Requested Registration Cutback") and the Company and the Preferred Stock Holders will participate in such offering in the following order of priority:

(i) First, there shall be included in such registration that number of Series B Registrable Securities that the Preferred Stock Holders shall have requested to be included in such offering and that does not exceed the Underwriter's Maximum Number;

(ii) Second, there shall be included in such registration that number of Series A Registrable Securities that the Preferred Stock Holders shall have requested to be included in such offering and that does not exceed the Underwriter's Maximum Number;

(iii) Third, the Company shall be entitled to include in such registration that number of securities that it proposes to offer and sell for its own account to the full extent of the remaining portion of the Underwriter's Maximum Number; and

(iv) Fourth, to the extent not inconsistent with any registration rights hereafter granted by the Company to holders of Company securities, the Preferred Stock Holders shall be entitled to include in such registration that number of shares of other Registrable Securities that the Preferred Stock Holders shall have requested to be included in such registration to the full extent of the remaining portion of the Underwriter's Maximum Number.

In the event that a Requested Registration Cutback results in less than all of the securities of a particular category (e.g., Series B Registrable Securities of Preferred Stock Holders or securities of the Company) that are requested to be included in such registration actually being included in such registration, then the number of securities of such category that will be included in such registration shall be shared pro rata among all of the holders of securities of such category that were requested to be included in such registration based on the number of shares of Common Stock held by each such holder of securities of such category, calculated on an as-converted to Common Stock basis.

SECTION 2.2 **Incidental Registrations**.

(a) Incidental Registration. Except with respect to a Company-initiated registration to effect its initial Qualified Public Offering, if the Company for itself or any of its security holders shall at any time or times after the date hereof undertake to register (including a Requested Registration pursuant to Section 2.1) under the Securities Act any shares of its capital stock or other securities (other than (i) the registration of an offer, sale or other disposition of securities solely to employees of, or other persons providing services to, the Company, or any subsidiary pursuant to an employee or similar benefit plan or (ii) relating to a merger, acquisition or other transaction of the type described in Rule 145 under the Securities Act or a comparable or successor rule, registered on Form S-4 or similar or successor forms promulgated by the Commission), on each such occasion the Company will notify each Holder of such determination or request at least thirty (30) days prior to the filing of such registration statement, and upon the request of any Holder given in writing within twenty (20) days after the receipt of such notice, subject to Section 2.2(b), the Company shall use its best efforts as soon as practicable thereafter to cause any of the Registrable Securities specified by any such Holder to be included in such registration statement to the extent such registration is permissible under the Securities Act and subject to the conditions of the Securities Act (an "Incidental Registration"). If a Holder decides not to include all of its Registrable Securities in any Incidental Registration filed by the Company, such Holder shall nevertheless continue to have the right to include any Registrable Securities in any subsequent Incidental Registration as may be filed by the Company with respect to offerings of its securities, all upon the terms and conditions set forth herein. The Company shall have the right to terminate or withdraw any Incidental Registration initiated by it under this Section 2.2 prior to the effectiveness of such registration whether or not any Holder has elected to include securities in such registration. The Expenses of such withdrawn registration shall be borne by the Company in accordance with Section 2.3.

(b) Priority in Registration. If an Incidental Registration is an underwritten offering, and the managing underwriters shall give written advice to the Holders and the Company that, in their opinion, market conditions dictate that no more than the Underwriter's Maximum Number could successfully be included in such registration, then the Company shall be required to include in such registration only such number of securities as is equal to the Underwriter's Maximum Number ("Incidental Registration Cutback") and the Company and the Holders will participate in such offering in the following order of priority:

(i) First, the Company shall be entitled to include in such registration that number of securities that the Company proposes to offer and sell for its own account in such registration and that does not exceed the Underwriter's Maximum Number; and

(ii) Second, the Company will be obligated and required to include in such registration that number of Registrable Securities that the Holders shall have requested to be included in such offering to the full extent of the remaining portion of the Underwriter's Maximum Number.

In the event that an Incidental Registration Cutback results in less than all of the securities of a particular category (e.g., securities of the Company or Registrable Securities of the Holders) that are requested to be included in such registration to actually be included in such registration, then the number of securities of such category that will be included in such registration shall be shared pro rata among all of the holders of securities of such category that were requested to be included in such registration based on the number of shares of Common Stock held by each such holder of securities of such category, calculated on an as converted to Common Stock basis.

SECTION 2.3 **Registration Expenses**. The Company shall pay all Registration Expenses incurred in connection with all Incidental Registrations and all Requested Registrations effected in accordance with this Article II. Notwithstanding the foregoing, the Company shall not be required to pay for any Registration Expenses of any registration proceeding begun pursuant to Section 2.1 if a registration request initiated by the Majority Preferred Stock Holders under Section 2.1(a) or 2.1(b) is subsequently withdrawn at the request of the Preferred Stock Holders of a majority of the Registrable Securities to be registered (in which case all participating Preferred Stock Holders shall bear such expenses pro rata based upon the number of Registrable Securities that were to be registered in the withdrawn registration) unless the Preferred Stock Holders of a majority of the Registrable Securities to be registered elect in writing to treat such withdrawn registration as an effective registration for purposes of the limitation on the number of permissible Requested Registrations, *provided*, however, that if at the time of such withdrawal, the Preferred Stock Holders have learned of a material adverse change in the condition, business or prospects of the Company from that known to the Preferred Stock Holders at the time of their request and they have withdrawn the request with reasonable promptness following the Preferred Stock Holders having learned of such material adverse change, then the Preferred Stock Holders shall not be required to pay any of such Registration Expenses and such withdrawn registration shall not be considered to have become effective for purposes of any limitation on the number of permissible Requested Registrations.

SECTION 2.4 **Effective Registration Statement**. A Requested Registration or an Incidental Registration effected pursuant to Section 2.1 or Section 2.2, respectively, shall not be deemed to have been effected unless the registration statement filed with respect thereto in accordance with the Securities Act has become effective with the Commission and kept effective in accordance with the provisions of Article III(a)(iii) below. Notwithstanding the foregoing, a registration statement will not be deemed to have become effective if (a) after it has become effective with the Commission, such registration is made subject to any stop order, injunction, or other order or requirement of the Commission or other governmental agency or any court proceeding for any reason other than a misrepresentation or omission by any Holder (in their respective capacities as "Holders" hereunder and not in any capacity as an officer or director of the Company), or (b) the conditions to closing specified in the purchase agreement or underwriting agreement entered into in connection with such registration are not satisfied, other than solely by reason of some act or omission by any Holder their respective capacities as "Holders" hereunder and not in any capacity as an officer or director of the Company).

SECTION 2.5 **Jurisdictional Limitations**. Notwithstanding anything in this Agreement to the contrary, the Company shall not be obligated to take any action to effect registration, qualification or compliance with respect to its Registrable Securities:

(a) In any particular jurisdiction in which the Company would be required to execute a general consent to service of process unless the Company is already subject to service in such jurisdiction and except as required by the Securities Act;

(b) That would require it to qualify generally to do business in any jurisdiction in which it is not already so qualified or obligated to qualify; or

(c) That would subject it to taxation in a jurisdiction in which it is not already subject generally to taxation.

ARTICLE III

REGISTRATION PROCEDURES

(a) Company Obligations. If and whenever the Company is required to use its best efforts to effect the registration of any Registrable Securities under the Securities Act as provided in Article II, the Company, as expeditiously as possible and subject to the terms and conditions of Article II, will do the following:

(i) Prepare and file with the Commission the requisite registration statement to effect such registration and use its diligent efforts to cause such registration statement to become and remain effective for the period set forth in Article III(a)(iii) below;

(ii) Permit any Holder of Registrable Securities to be sold under such registration statement who, in the reasonable judgment of the Company's counsel, might be deemed to be an underwriter or a controlling person of the Company, to participate in the preparation of such registration statement (including making available for inspection by any such Person and any attorney, accountant or other agent retained by such Person, all financial and other records, pertinent corporate documents and all other information reasonably requested in connection therewith) and give to the Holders of Registrable Securities to be sold under such registration statement, the underwriters, if any, and their respective counsel and accountants, advance draft copies of such registration statement, each prospectus included therein or filed with the Commission at least five (5) business days prior to the filing thereof with the Commission, and any amendments and supplements thereto promptly as they become available, and will give each of them such access to its books and records and such opportunities to discuss the business of the Company with its officers and the independent public accountants who have certified its financial statements as shall be necessary, in the opinion of such Holders and such underwriters' respective counsel, to conduct a reasonable investigation within the meaning of the Securities Act;

(iii) Prepare and file with the Commission such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to keep such registration statement effective and to comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such registration statement until the earlier of such time as all of such securities have been disposed of in accordance with the intended methods of disposition by the seller or sellers thereof set forth in such registration statement or the expiration of one hundred eighty (180) days after such registration statement becomes effective (such period of one hundred eighty (180) days to be extended one day for each day or portion thereof during such period that such registration statement shall be subject to any stop order suspending the effectiveness of the registration statement, or of any order suspending or preventing the use of any related prospectus or suspending the qualification of any Registrable Securities included in such registration statement for sale in any jurisdiction);

(iv) Furnish to the Holders of Registrable Securities to be sold under such registration statement without charge to the Holders, such number of conformed copies of such registration statement and of each such amendment and supplement thereto (in each case including all exhibits), such number of copies of the prospectus contained in such registration statement (including each preliminary prospectus and any summary prospectus) and any other prospectus filed under Rule 424 under the Securities Act, in conformity with the requirements of the Securities Act, and such other documents, as the purchaser or any Holder of Registrable Securities to be sold under such registration statement may reasonably request;

(v) Use its best efforts to register or qualify all Registrable Securities covered by such registration statement under such other United States state securities or blue sky laws of such jurisdictions as any Holder of Registrable Securities to be sold under such registration statement shall reasonably request, to keep such registration or qualification in effect for the time period set forth in Article III(a)(iii) hereof, and take any other action that may be reasonably necessary or advisable to enable the Holders of Registrable Securities to be sold under such registration statement to sell Registrable Securities in such jurisdictions;

(vi) Use its best efforts to cause all Registrable Securities covered by such registration statement to be registered with or approved by such other United States state governmental agencies or authorities as may be necessary to enable the Holders of Registrable Securities to be sold under such registration statement to sell Registrable Securities as intended by such registration statement;

(vii) In the event of the issuance of any stop order suspending the effectiveness of the registration statement, or of any order suspending or preventing the use of any related prospectus or suspending the qualification of any Registrable Securities included in such registration statement for sale in any jurisdiction, the Company shall use its best efforts promptly to obtain the withdrawal of such order;

(viii) Use its best efforts to furnish to the Holders of Registrable Securities included in such registration statement:

(1) An opinion, dated the effective date of the registration statement, of the independent counsel representing the Company for the purposes of such registration, addressed to the underwriters, if any, and to the Holders of Registrable Securities included in such registration statement making such request, stating that such registration statement has become effective under the Securities Act and that:

(A) To the knowledge of such counsel, no stop order suspending the effectiveness thereof has been issued and no proceedings for that purpose have been instituted or are pending or contemplated under the Securities Act;

(B) The registration statement, the related prospectus, and each amendment or supplement thereto, comply as to form in all material respects with the requirements of the Securities Act and the applicable rules and regulations of the Commission thereunder (except that such counsel need express no opinion as to financial statements and related schedules contained therein);

(C) To the knowledge of such counsel, as of the effective date, neither the registration statement, the prospectus, nor any amendment or supplement thereto (other than the financial statements and related schedules therein), contains any untrue statement of a material fact or omits a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading;

(D) The descriptions in the registration statement or the prospectus, or any amendment or supplement thereto, of the securities to be registered, insofar as such description purports to constitute a summary of the terms of the securities to be registered, and the description of the underwriting, insofar as such description purports to describe the provisions of the laws and documents, which have been provided to counsel, directly pertaining to the underwriting are accurate and fairly present the information required to be shown; and

(E) Except as disclosed in the registration statement or other public filing made by the Company with the Commission, such counsel does not know of any pending legal or governmental proceedings to which the Company is a party or of which any property of the Company is the subject that, if determined adversely to the Company, would individually or in the aggregate have a material adverse effect on the then-correct or future consolidated financial position, stockholders' equity or results of operation of the Company, nor of any contracts or documents or instruments of a character required to be described in the registration statement or prospectus, or any amendment or supplement thereto or to be filed as exhibits to the registration statement that are not described and filed as required (such opinion of counsel shall additionally cover such legal matters with respect to the registration in respect of which such opinion is being given as the majority of the Holders of Registrable Securities included in such registration statement may reasonably request and may contain such qualifications and limitations as are customarily included in opinions of such sort); and

(2) A letter, dated the effective date of the registration statement, from the independent certified public accountants of the Company, addressed to the underwriters, if any, and to the Holders of Registrable Securities included in such registration statement making such request, stating that they are independent certified public accountants within the meaning of the Securities Act and that in the opinion of such accountants, the financial statements and other financial data of the Company included in the registration statement or the prospectus, or any amendment or supplement thereto, comply as to form in all material respects with the applicable accounting requirements of the Securities Act (such letter from the independent certified public accountants shall additionally cover such other financial matters (including information as to the period ending not more than five business days prior to the date of such letter) with respect to the registration in respect of which such letter is being given as the Investors may reasonably request);

(ix) Immediately notify the Holders of Registrable Securities included in such registration statement at any time when a prospectus relating thereto is required to be delivered under the Securities Act, of its becoming aware of any event as result of which the prospectus included in such registration statement, as then in effect, includes an untrue statement of material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances under which they were made, and at the request of such Holders promptly prepare and furnish to such Holders a reasonable number of copies of a supplement to or an amendment of such prospectus as may be necessary so that, as thereafter delivered to the purchasers of such securities, such prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances under which they were made;

(x) Otherwise use its best efforts to comply with all applicable rules and regulations of the Commission, and make available to its security holders, as soon as reasonably practicable, an earnings statement covering the period of at least twelve months, but not more than eighteen months, beginning with the first full calendar month after the effective date of such registration statement, which earnings statement shall satisfy the provisions of Section 11(a) of the Securities Act and Rule 158 thereunder;

(xi) Provide a transfer agent and registrar for all Registrable Securities covered by such registration statement not later than the effective date of such registration statement; and

(xii) Use its best efforts to list all Registrable Securities covered by such registration statement on any securities exchange on which the same class of securities issued by the Company are then listed.

(b) Holder Obligations.

(i) The Company may require each Holder of Registrable Securities to be sold under such registration statement to furnish the Company with such information as it may reasonably request in writing (I) regarding such Holder's proposed distribution of such securities and (2) as required in connection with any registration (including an amendment to a registration statement or prospectus), qualification or compliance referred to in this Article III.

(ii) Each Holder, by execution of this Agreement, agrees (1) that upon receipt of any notice from the Company, or upon such Holder's otherwise becoming aware, of the happening of any event of the kind described in subdivision (a)(ix) of this Article III, such Holder will forthwith discontinue its disposition of Registrable Securities pursuant to the registration statement relating to such Registrable Securities until the receipt by such Holder of the copies of the supplemented or amended prospectus contemplated by subdivision (a)(ix) of this Article III and, if so directed by the Company, will deliver to the Company all copies other than permanent file copies, then in possession of the Holders of the prospectus relating to such Registrable Securities current at the time of receipt of such notice and (2) that it will immediately notify the Company, at any time when a prospectus relating to the registration of such Registrable Securities is required to be delivered under the Securities Act, of the happening of any event as a result of which information previously furnished in writing by such Holder to the Company specifically for inclusion in such prospectus contains an untrue statement of a material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances under which they were made. In the event the Company or any such Holder shall give any such notice, the period referred to in subdivision (a)(iii) of this Article III shall be extended by a number of days equal to the number of days during the period from and including the giving of notice pursuant to subdivision (a)(ix) of this Article III to and including the date when such Holder shall have received the copies of the supplemented or amended prospectus contemplated by subdivision (a)(ix) of this Article III.

ARTICLE IV

UNDERWRITTEN OFFERINGS

SECTION 4.1 **Underwritten Offerings**.

(a) Underwritten Offering. In connection with any underwritten offering pursuant to a registration requested under Section 2.1, the Company will enter into an underwriting agreement (and any other customary agreements) with the underwriters for such offering, such agreement to be in form and substance reasonably satisfactory to the Majority Preferred Stock Holders and such underwriters in their reasonable judgment and to contain such representations and warranties by the Company and such other terms as are customarily contained in agreements of that type, including, without limitation, indemnities to the effect and to the extent provided in Section 5.1. Each Preferred Stock Holder participating in such underwritten offering shall be a party to such underwriting agreement and may, at such Preferred Stock Holder's option, require that any or all of the representations and warranties by, and the other agreements on the part of, the Company to and for the benefit of such underwriters shall also be made to and for the benefit of each such Preferred Stock Holder and that any or all of the conditions precedent to the obligations of such underwriters under such underwriting agreement be conditions precedent to the obligations of such Preferred Stock Holder. No Preferred Stock Holder participating in any such underwritten offering shall be required by the provisions hereof to make any representations or warranties to or agreements with the Company or the underwriters other than representations, warranties or agreements regarding such Preferred Stock Holder and its intended method of distribution and any other representation required by law.

(b) Selection of Underwriters. If a Requested Registration pursuant to Section 2.1 involves an underwritten offering, then the Company shall select the underwriter from underwriting firms of national reputation, subject to the reasonable approval of the Majority Preferred Stock Holders.

SECTION 4.2 **Holdback Agreements**.

(a) Each Holder agrees, if so requested by the managing underwriter in each underwritten registration of the Company's capital stock or other securities described in Article II in a writing referencing this Section 4.2(a), not to effect (except as part of such underwritten registration in accordance with the provisions hereof or pursuant to a transaction exempt from registration (other than under Rule 144 or Rule 145 of the Securities Act)) any sale, distribution, short sale, loan, grant of options for the purchase of, or otherwise dispose of, any Registrable Securities for such period as such managing underwriter requests, such period in no event to commence earlier than seven (7) days prior to, or to end more than 180 days after, the effective date of such registration. In addition, each Holder agrees to execute and deliver to any managing underwriter (or, in the case of any offering that is not underwritten, an investment banker) in connection with a registration of Registrable Securities under the Securities Act in which such Holder participates (pursuant to Article II hereof) any lock-up letter reasonably requested of such Holder by such managing underwriter. Each Holder further agrees that the Company may instruct its transfer agent to place stop transfer notations in its records to enforce the provisions of this Section 4.2(a). The foregoing restrictions shall be conditioned on each officer, director of the Company and holder of one percent or more of the Company's Common Stock or securities convertible or exchangeable for one percent or more of its Common Stock (determined in all instances on a fully diluted basis) being bound by substantially the same restrictions (and, in any event, no less onerous) as are set forth above.

ARTICLE V

INDEMNIFICATION AND CONTRIBUTION

SECTION 5.1 **Indemnification**.

(a) Indemnification by the Company. In the event of any registration under the Securities Act pursuant to Article II of any Registrable Securities covered by such registration, the Company will, to the extent permitted by law, and hereby does, indemnify and hold harmless each Holder of Registrable Securities to be sold under such registration statement, each such Holder's legal counsel and independent accountants, each other person who participates as an underwriter in the offering or sale of such securities (if so required by such underwriter as a condition to including the Registrable Securities of the Holders in such registration) and each other person, if any, who controls any such Holder or any such underwriter within the meaning of the Securities Act (collectively, the "Indemnified Parties"), against any losses, claims, damages or liabilities, joint or several, to which the Holders of Registrable Securities to be sold under such registration statement or underwriter or controlling person may become subject under the Securities Act or otherwise, insofar as such losses, claims, damages or liabilities (or actions or proceedings, whether commenced or threatened, in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of any material fact contained in any registration statement under which such securities were registered under the Securities Act, any preliminary prospectus, final prospectus or summary prospectus contained therein or any document incorporated therein by reference, or any amendment or supplement thereto, or any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein in light of the circumstances in which they were made not misleading, or arise out of any violation by the Company of any rule or regulation promulgated under the Securities Act or state securities law applicable to the Company and relating to action or inaction required of the Company in connection with any such registration, and the Company will reimburse the Indemnified Parties for any legal or any other expenses reasonably incurred by them in connection with investigating or defending any such loss, claim, liability, action or proceeding; *provided*, however, that the indemnity agreement contained in this Section 5.1(a) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of the Company (which consent shall not be unreasonably withheld); and *provided*, further, however that the Company shall not be liable to any Indemnified Party in any such case to the extent that any such loss, claim, damage, liability (or action or proceeding in respect thereof) or expense arises out of or is based upon any untrue statement or alleged untrue statement or omission or alleged omission made in such registration statement, any such preliminary prospectus, final prospectus, summary prospectus, amendment or supplement in reliance upon and in conformity with information furnished to the Company in writing by any Indemnified Party specifically for use therein.

(b) Indemnification by the Holders. As a condition to including any Registrable Securities of any person or entity in any registration statement filed pursuant to Article II, each Holder, to the extent permitted by law, hereby agrees to indemnify and hold harmless (in the same manner and to the same extent as set forth in subdivision (a) of this Section 5.1) the Company, each director of the Company, each officer of the Company and each other person, if any, who controls the Company within the meaning of the Securities Act, with respect to any statement or alleged statement in or omission or alleged omission from such registration statement, any preliminary prospectus, final prospectus or summary prospectus contained therein, or any amendment or supplement thereto, if, and only if, such statement or alleged statement or omission or alleged omission was made in reliance upon and in conformity with information furnished specifically for use therein to the Company directly by such person or entity specifically for use therein; *provided*, however, that the obligation of any Holder hereunder shall be limited to an amount equal to the gross proceeds received by such Holder upon the sale of Registrable Securities sold in the offering covered by such registration.

(c) Notices of Claims, etc. Promptly after receipt by an Indemnified Party of notice of the commencement of any action or proceeding involving a claim referred to in the preceding subdivisions of this Section 5.1, such Indemnified Party will, if a claim in respect thereof is to be made against a party required to provide indemnification (an "Indemnifying Party"), give written notice to the latter of the commencement of such action, *provided*, however, that the failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligation under the preceding subdivisions of this Section 5.1, except to the extent that the Indemnifying Party is actually prejudiced by such failure to give notice. In case any such action is brought against an Indemnified Party, unless in such Indemnified Party's reasonable judgment a conflict of interest between such Indemnified and indemnifying parties may exist in respect of such claim, the Indemnifying Party shall be entitled to participate in and to assume the defense thereof, jointly with any other Indemnifying Party similarly notified to the extent that it may wish, with counsel reasonably satisfactory to such Indemnified Party, and after notice from the Indemnifying Party to such Indemnified Party of its election so to assume the defense thereof, the Indemnifying Party shall not be liable to such Indemnified Party for any legal or other expenses subsequently incurred by the latter in connection with the defense thereof other than reasonable costs of investigation. No Indemnifying Party shall consent to entry of any judgment or enter into any settlement without the consent of the Indemnified Party which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation.

(d) Other Indemnification. Indemnification similar to that specified in the preceding subdivisions of this Section 5.1 (with appropriate modifications) shall be given by the Company and each holder of Registrable Securities included in any registration statement to each other and any underwriter, as applicable, with respect to any required registration or other qualification of securities under any Federal or state law or regulation of any governmental authority, other than the Securities Act.

(e) Indemnification Payment. The indemnification required by this Section 5.1 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or expense, loss, damage or liability is incurred.

(f) Survival of Obligations. The obligations of the Company and of the Holders under this Section 5.1 and Section 5.2 shall survive the completion of any offering of Registrable Securities under this Agreement.

SECTION 5.2 **Contribution**. If the indemnification provided for in Section 5.1 is unavailable or insufficient to hold harmless an Indemnified Party, then each Indemnifying Party shall contribute to the amount paid or payable to such Indemnified Party as a result of the losses, claims, damages or liabilities referred to in Section 5.1 an amount or additional amount, as the case may be, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party or parties, on the one hand, and the Indemnified Party, on the other, in connection with the statements or omissions which resulted in such losses, claims, demands or liabilities as well as any other relevant equitable considerations. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Indemnifying Party or parties, on the one hand, or the Indemnified Party, on the other, and the parties' relative, intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The amount paid to an Indemnified Party as a result of the losses, claims, damages or liabilities referred to in the first sentence of this Section 5.2 shall be deemed to include any legal or other expenses reasonably incurred by such Indemnified Party in connection with investigating or defending any action or claim which is the subject of this Article V. No person guilty of fraudulent misrepresentation within the meaning of Section 11(f) of the Securities Act shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation.

ARTICLE VI

COMPANY COVENANTS

SECTION 6.1 **Covenants Relating to Rule 144; Reports Under The Exchange Act**. With a view to (a) making available the benefits of certain rules and regulations of the Commission which may at any time permit the sale of securities of the Company to the public without registration after such time as a public market exists for the Common Stock of the Company or (b) causing the Company to be and remain eligible to file a registration on Commission Form S-3, the Company agrees to do the following:

(a) To make and keep public information available in accordance with Rule 144 under the Securities Act at all times after the effective date of the first registration under the Securities Act filed by the Company for an offering of its securities to the general public;

(b) To take such action, including the voluntary registration of its Common Stock under Section 12 of the Exchange Act, as is necessary to enable the Holders to utilize Commission Form S-3 for the sale of their Registrable Securities, such action to be taken as soon as practicable after the end of the fiscal year in which the first registration statement filed by the Company for the offering of its securities to the general public is declared effective;

(c) To use its best efforts to then file with the Commission in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act, as amended (at any time after it has become subject to such reporting requirements);

(d) So long as a Holder owns any Registrable Securities, to furnish to such Holder forthwith upon request a written statement by the Company as to its compliance with the reporting requirements of said Rule 144 (at any time after ninety (90) days after the effective date of the first registration statement filed by the Company for an offering of its securities to the general public), and of the Securities Act and the Exchange Act (at any time after it has become subject to such reporting requirements) and a copy of the most recent annual or quarterly report of the Company, and such other reports and documents of the Company as an Holder may reasonably request in availing itself of any rule or regulation of the Commission allowing an Holder to sell any such securities without registration; and

(e) The Company shall use its best efforts to take any action necessary to maintain its eligibility to utilize Commission Form S-3 to permit resales as requested by the Holders with respect to "Transactions Involving Secondary Offerings" as described in General Instruction I.B.3 of Commission Form S-3.

SECTION 6.2 **Other Registration Rights**. The Company represents and warrants that it has not granted any registration rights to any Person other than established by this Agreement.

SECTION 6.3 **Public Offerings in Canada**.

(a) As used in this Section 6.3, (i) "Canadian IPO" means the initial offering pursuant to which Registrable Securities are distributed by prospectus under the laws of any Canadian province or any other transaction following which the Company or any successor becomes a reporting issuer in any Canadian province; and (ii) "Canadian Law" means the *Securities Act* (Ontario) and the regulations, rules, orders and policies promulgated thereunder and the similar legislation, regulations, rules, orders and policies of any other Canadian province or territory applicable to the Company.

(b) At any time and from time to time after the closing of a Canadian IPO, in lieu of or in conjunction with any registration under the Securities Act as provided in Article II, the Company shall, upon and in the manner and to the extent requested in writing by a Holder, to the extent that the Holder in good faith determines that the sale of its Registrable Securities by any other method would not be permitted by Canadian Law then in effect other than on a prospectus exempt or a control block notice (being notice under Subsection 2.8 (4) of Multilateral Instrument 45-102—Resale of Securities or its equivalent) basis, file a preliminary prospectus with one or more Canadian securities regulatory authorities and use its best efforts to obtain a receipt for a (final) prospectus from such Canadian securities regulatory authorities to qualify for distribution in any province of Canada (a "Canadian Offering") Registrable Securities for which registration has been or could have been requested by Holders under Article II (had the Canadian IPO constituted an initial public offering for the purposes of such Article), in which case such Canadian Offering shall count together with the concurrent registration under the Securities Act (if any) as one registration for purposes of Article II.

(c) If at any time after the closing of a Canadian IPO the Company proposes or is required to effect (i) a Canadian Offering of its equity securities; or (ii) a distribution of securities which are exercisable into or exchangeable for equity securities, then each Holder shall be entitled, subject to applicable Canadian Law, to participate in such Canadian Offering or distribution to the same extent and on the same terms and conditions as it would have been entitled to participate in a registration pursuant to Section 2.2 hereof.

(d) With respect to the Holders' participation in any Canadian Offering or distribution pursuant to this Section 6.3, the provisions of Article II and other terms of this Agreement respectively applicable thereto shall apply, *mutatis mutandis*, to such Canadian Offering or distribution (for example, and without limitation, the same relative priorities under Sections 2.1(c) and 2.2 (b) shall apply to the Canadian Offering or distribution as to the corresponding registration in the United States, and the Holders shall not participate to any greater proportionate extent in the Canadian Offering or distribution than its participation in the corresponding registration in the United States), except that the Company need only file a preliminary prospectus within sixty (60) days of a S-1 Registration Notice, and the Company will comply with any other Canadian requirements customarily complied with in respect of such distributions in Canada.

ARTICLE VII

PREEMPTIVE RIGHTS

SECTION 7.1 **Preemptive Rights**. The Company shall only issue New Securities in accordance with the following terms:

(a) The Company shall not issue any New Securities unless it first delivers to each Preferred Stock Holder who is a Qualified Holder then having rights under this Section (each such Person being referred to in this Article VII as a "Purchaser") a written notice (the "Notice of Proposed Issuance") specifying the type and total number of such New Securities that the Company then intends to issue (the "Offered New Shares"), all of the material terms, including the price upon which the Company proposes to issue the Offered New Shares and stating that the Purchasers shall have the right to purchase the Offered New Shares in the manner specified in this Article VII for the same price per share and in accordance with the same terms and conditions specified in such Notice of Proposed Issuance.

(b) During the ten (10) consecutive business day period commencing on the date the Company delivers to all of the Purchasers the Notice of Proposed Issuance (the "Ten Day Period") in accordance with Article VII hereof, the Purchasers shall have the option to purchase Offered New Shares at the same price per share and upon the same terms and conditions specified in the Notice of Proposed Issuance. Each Purchaser electing to purchase Offered New Shares must give written notice of its election to the Company prior to the expiration of the Ten Day Period and if a Purchaser has not given written notice within the Ten Day Period, such Purchaser shall be deemed to have rejected his, her or its right to purchase the Offered New Shares. If the Offered New Shares are being offered as a part of an investment unit together with debt or other instruments, any election by a Purchaser to purchase Offered New Shares shall also constitute an election to purchase a like portion of such debt or other instruments. Each Purchaser shall have the right to condition his, her or its purchase of the Offered New Shares upon the closing of the sale of the balance of the Offered New Shares.

(c) Each Purchaser shall have the right to purchase that number of the Offered New Shares as shall be equal to the number of the Offered New Shares multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock represented by the Company Securities then owned by such Purchaser on a Fully Diluted Basis and the denominator of which shall be the aggregate number of shares of Common Stock represented by the Company Securities then owned by all of the Holders on a Fully Diluted Basis. The amount of such Offered New Shares that each Purchaser is entitled to purchase under this Article VII shall be referred to as its "Proportionate Share."

(d) No Purchaser shall have any right of oversubscription.

(e) If some or all of the Offered New Shares have not been purchased by the Purchasers pursuant to paragraphs (a)-(d) hereof, then the Company shall have the right, until the expiration of one hundred eighty (180) days commencing on the first day immediately following the expiration of the Ten Day Period, to issue such remaining Offered New Shares to one or more third parties at not less than, and on terms on the whole no more favorable in any material respect to the purchasers thereof than, the price and terms specified in the Notice of Proposed Issuance. If for any reason the Offered New Shares are not issued within such period and at such price and on such terms, the right to issue in accordance with the Notice of Proposed Issuance shall expire and the provisions of this Agreement shall continue to be applicable to the Offered New Shares.

(f) The Notice of Proposed Issuance will specify the place, time and date of the consummation of the purchase of the Offered New Shares.

(g) The Purchasers not exercising their rights under this Article VII who hold a majority of the Common Stock held by all of the Purchasers not exercising their rights under this Article VII (calculated on a Fully Diluted Basis) may waive, either prospectively or retrospectively, any and all rights arising under this Article VII with respect to the issuance of any New Securities to any Person, and any such waiver shall be effective as to all Purchasers not exercising their rights under this Article VII.

(h) The Company may proceed with the issuance of New Securities without first following procedures in Article VII(a)-(f) above, *provided* that (i) the purchaser of such New Securities agrees in writing to take such New Securities subject to the provisions of this Article VII(h), and (ii) within ten (10) days following the issuance of such New Securities, the Company or the purchaser of the New Securities undertakes steps substantially similar to those in Article VII(a)-(f) above to offer to all Purchasers the right to purchase from the Company or from the purchaser of such New Securities a pro rata portion of such New Securities, or additional New Securities, or securities equivalent to the New Securities in all material respects at the same price and on the same terms applicable to the purchaser's purchase thereof, to the extent necessary to provide the Purchasers with substantially the same dilution protection offered by this Article VII as if the procedures set forth in Article VII(a)-(f) had been followed prior to the issuance of such New Securities.

(i) Notwithstanding the foregoing, no Preferred Stock Holder shall have any rights under this Article VII if such Preferred Stock Holder has sold more than seventy-five percent (75%) of the Company Securities held by such Preferred Stock Holder (together with holdings of any affiliates of such Preferred Stock Holder) on the date hereof.

(j) The rights set forth in this Article VII shall terminate upon a Qualified Public Offering.

ARTICLE VIII

SECTION 8.1 **Investor Information Requirements**. The Company hereby agrees that so long as an Investor holds more than fifty percent (50%) of the Company Securities held by such Investor (including those Company Securities to be issued to such Investor pursuant to such Investor's Subscription Agreement) as of the date of this Agreement (each a "Qualified Investor"), the Company shall comply with the following provisions:

(a) Annual Statements. Within one-hundred twenty (120) days after the close of each fiscal year of the Company, commencing with the fiscal year ending on December 31, 2002, the Company will deliver to each Qualified Investor audited consolidated and consolidating balance sheets and statements of income and retained earnings and of cash flows of the Company, which annual financial statements shall show the financial condition of the Company as of the close of such fiscal year and the results of the Company's operations during such fiscal year. Each of the financial statements delivered in accordance with this Section 7.1 shall be certified without qualification by the accounting firm auditing the same to have been prepared in accordance with GAAP except as specifically disclosed therein. The Company shall also deliver to each Qualified Investor simultaneously with the delivery of such annual financial statements a copy of the so called "management letter" issued by the auditors in connection with such annual financial statements.

(b) Quarterly Statements. Within thirty (30) days after the end of each of the first three quarters of the fiscal quarter, commencing with the quarter ending March 31, 2003, the Company will deliver to each Qualified Investor financial statements, including an unaudited profit and loss statement and an unaudited balance sheet as of the end of such fiscal quarter, prepared in accordance with GAAP.

(c) The rights set forth in this Article VIII shall terminate upon a Qualified Public Offering.

ARTICLE IX

ASSIGNABILITY

This Agreement and all of the provisions hereof may (subject to the next following sentence) be assigned by any Investor or Series A Holder to, and, upon such assignment, shall inure to the benefit of, any purchaser, transferee or assignee, and any such purchaser, transferee or assignee shall take such shares of Company securities subject to, and shall be bound by, the terms of this Agreement; provided in each instance that the transferee or assignee of such rights assumes in writing the obligations of such Investor or Series A Holder in respect of such shares under this Agreement. No such assignment may be made of less than 11,625 shares of Company Securities (as adjusted for stock splits, recapitalizations and other similar events) without the prior written consent of the Company. However, in any case, the Company shall not be required to recognize any such purchaser, transferee or assignee as an "Investor" or "Series A Holder", as the case may be, under this Agreement unless and until either (i) such person becomes the holder of record of the Company Securities so assigned or (ii) the Company receives written notice of such assignment and (iii) such person executes and delivers to the Company a counter-part signature page to this Agreement. A Founder may assign any of such Founder's rights hereunder (a) with the prior written consent of the Majority Investors or (b) in connection with such Founder's transfer of Company Securities to such Founder's Family Members for *bona fide* estate planning purposes or in connection with a court-approved divorce decree *provided that* (i) the transferee shall hold such Company Securities subject to the same restrictions applicable to its transferor hereunder and shall agree in writing to be bound by the terms of the Agreement, and (ii) the Founder retains voting control over all of the Company Securities subject to such transfer.

ARTICLE X

MISCELLANEOUS

SECTION 10.1 **Waivers; Amendments; Additional Parties**.

(a) Except as otherwise set forth herein, the rights and obligations of the Company and all other parties hereto under this Agreement may be waived (either generally or in a particular instance, either retroactively or prospectively, and either for a specified period of time or indefinitely) or amended if and only if such waiver or amendment is consented to in writing by the Company and by the Holders holding a majority of the Registrable Securities determined on a Fully Diluted Basis; *provided*, however, that if any amendment would materially and adversely modify the rights of one or more Holders (the "Adversely Affected Holder") in a way that is different from its effect on other Holders, such amendment shall not be effective as to any Adversely Affected Holder unless consented to by a majority in interest of the Adversely Affected Holders determined on a Fully Diluted Basis. Each Holder shall be bound by any amendment or waiver effected in accordance with this Section, whether or not such Holder has consented to such amendment or waiver. Upon the effectuation of each such waiver or amendment, the Company shall promptly give written notice thereof to the Holders who have not previously consented thereto in writing.

(b) If approved by the Board, any Person who purchases shares of Series B Preferred Stock may, by executing a Series B Investor Signature Page in the form attached hereto, become an "Investor" (and shall be entitled to all of the rights and subject to all of the obligations of an Investor hereunder) (each such Person, a "New Investor") without the consent of any party hereto other than the Company. Promptly following the execution of a Series B Investor Signature Page by any New Investor, the Company shall cause Schedule A to be revised to reflect the addition of such New Investor as an Investor. The Company shall provide each Investor written notice of the addition of such New Investor as an Investor, which notice shall include a copy of Schedule A as revised.

SECTION 10.2 **Successors and Assigns**. Except as otherwise expressly provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors, assigns, heirs, executors and administrators of the parties hereto.

SECTION 10.3 **Entire Agreement**. This Agreement constitutes the full and entire understanding and agreement of the parties with regard to the subjects hereof and supersedes in their entirety all other or prior agreements, whether oral or written, with respect thereto, including without limitation Section 3(c) of the Subscription Agreement dated May 21, 2001 among the Company, Maurice Zauderer, Zauderer Family Trust, Louis Zauderer, Deepak M. Sahasrabudhe, Vaccinex (Ontario), L.P., and Trust fbo Pan Atlantic Bank & Trust Ltd and other Investors which Section 3(c) is hereby terminated in its entirety.

SECTION 10.4 **Notices**. All demands, notices, requests, consents and other communications required or permitted under this Agreement shall be in writing and shall be personally delivered or sent by facsimile machine (with a confirmation copy sent by one of the other methods authorized in this Section), reputable commercial overnight delivery service (including Federal Express and U.S. Postal Service overnight delivery service) or, deposited with the U.S. Postal Service mailed first class, registered or certified mail, postage prepaid, as set forth below:

If to the Company, addressed to:

Vaccinex, Inc.
1895 Mt. Hope Avenue
Rochester, New York 14620
USA
Attn: President
Fax: 1-585-271-2765

with a copy to:

Edwards & Angell, LLP
101 Federal Street
Boston, Massachusetts
02110 USA

Attn: Albert L. Sokol, Esq.

If to any Holder, to it at its address specified on **Schedule A**.

Notices shall be deemed given upon the earlier to occur of (i) receipt by the party to whom such notice is directed; (ii) if sent by facsimile machine, on the day (other than a Saturday, Sunday or legal holiday in the jurisdiction to which such notice is directed) such notice is sent if sent (as evidenced by the facsimile confirmed receipt) prior to 5:00 p.m. Eastern Time and, if sent after 5:00 p.m. Eastern Time, on the day (other than a Saturday, Sunday or legal holiday in the jurisdiction to which such notice is directed) after which such notice is sent; (iii) on the first business day (other than a Saturday, Sunday or legal holiday in the jurisdiction to which such notice is directed) following the day the same is deposited with the commercial courier if sent by commercial overnight delivery service; or (iv) the fifth day (other than a Saturday, Sunday or legal holiday in the jurisdiction to which such notice is directed) following deposit thereof with the U.S. Postal Service as aforesaid. Each party, by notice duly given in accordance therewith may specify a different address for the giving of any notice hereunder.

SECTION 10.5 **Governing Law**. This Agreement shall be construed and enforced in accordance with and governed by the laws of the State of New York (without giving effect to any conflicts or choice of laws provisions thereof that would cause the application of the domestic substantive laws of any other jurisdiction).

SECTION 10.6 **Consent To Jurisdiction**.

(a) SUBJECT TO THE PROVISIONS OF SECTION 10.9, EACH OF THE PARTIES HERETO HEREBY CONSENTS TO THE EXCLUSIVE JURISDICTION OF ALL STATE AND FEDERAL COURTS LOCATED IN ROCHESTER, NEW YORK, AS WELL AS TO THE JURISDICTION OF ALL COURTS TO WHICH AN APPEAL MAY BE TAKEN FROM SUCH COURTS, FOR THE PURPOSE OF ANY SUIT, ACTION OR OTHER PROCEEDING ARISING OUT OF, OR IN CONNECTION WITH, THIS AGREEMENT OR ANY OF THE TRANSACTIONS CONTEMPLATED HEREBY, INCLUDING, WITHOUT LIMITATION, ANY PROCEEDING RELATING TO ANCILLARY MEASURES IN AID OF ARBITRATION, PROVISIONAL REMEDIES AND INTERIM RELIEF, OR ANY PROCEEDING TO ENFORCE ANY ARBITRAL DECISION OR AWARD. EACH PARTY HEREBY EXPRESSLY WAIVES ANY AND ALL RIGHTS TO BRING ANY SUIT, ACTION OR OTHER PROCEEDING IN OR BEFORE ANY COURT OR TRIBUNAL OTHER THAN THE COURTS DESCRIBED ABOVE AND COVENANTS THAT IT SHALL NOT SEEK IN ANY MANNER TO RESOLVE ANY DISPUTE OTHER THAN AS SET FORTH IN THIS SECTION 10.6 OR TO CHALLENGE OR SET ASIDE ANY DECISION, AWARD OR JUDGMENT OBTAINED IN ACCORDANCE WITH THE PROVISIONS HEREOF.

(b) EACH OF THE PARTIES HERETO HEREBY EXPRESSLY WAIVES ANY AND ALL OBJECTIONS IT MAY HAVE TO VENUE, INCLUDING, WITHOUT LIMITATION, THE INCONVENIENCE OF SUCH FORUM, IN ANY OF SUCH COURTS. IN ADDITION, EACH OF THE PARTIES CONSENTS TO THE SERVICE OF PROCESS BY PERSONAL SERVICE OR ANY MANNER IN WHICH NOTICES MAY BE DELIVERED HEREUNDER IN ACCORDANCE WITH SECTION 10.4 OF THIS AGREEMENT.

SECTION 10.7 **Equitable Remedies**. The parties hereto agree that irreparable harm would occur in the event that any of the agreements and provisions this Agreement were not performed fully by the parties hereto in accordance with their specific terms or conditions or were otherwise breached, and that money damages are an inadequate remedy for breach of this Agreement because of the difficulty of ascertaining and quantifying the amount of damage that will be suffered by the parties hereto in the event that this Agreement is not performed in accordance with its terms or conditions or is otherwise breached. It is accordingly hereby agreed that the parties hereto shall be entitled to an injunction or injunctions to restrain, enjoin and prevent breaches of this Agreement by the other parties and to enforce specifically such terms and provisions of this Agreement, such remedy being in addition to and not in lieu of, any other rights and remedies to which the other parties are entitled to at law or in equity.

SECTION 10.8 **WAIVER OF JURY TRIAL**. **WITHOUT LIMITING THE PROVISIONS OF SECTION 10.9 RELATING TO ARBITRATION EACH OF THE PARTIES HERETO HEREBY VOLUNTARILY AND IRREVOCABLY WAIVES TRIAL BY JURY IN ANY ACTION OR OTHER PROCEEDING BROUGHT IN CONNECTION WITH THIS AGREEMENT, ANY OF THE RELATED AGREEMENTS, DOCUMENTS OR ANY OF THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY.**

SECTION 10.9 **Alternative Dispute Resolution**. Any controversy, dispute or claim arising out of or in connection with or relating to this Agreement, or the breach, termination or validity hereof or any transaction contemplated hereby (any such controversy, dispute or claim being referred to as a "Dispute") shall be finally settled by arbitration conducted expeditiously in accordance with the Commercial Arbitration Rules then in force (the "AAA Rules") of the American Arbitration Association (the "AAA"). There shall be a panel of three arbitrators who shall be appointed pursuant to AAA procedures, in each case, within fifteen (15) business days following receipt by the respondent(s) of a demand for arbitration in any such proceeding. Each of the arbitrators shall be an attorney with no less than fifteen (15) years' experience in the practice of business law (preferably with experience in the acquisition and financing of businesses such as those engaged in by the Company and the Subsidiaries at the time such dispute arises) who shall not have performed any services for any of the parties or person controlled by any of the parties for a period of five years prior to the date the demand for arbitration is received by the respondent(s). Any arbitration pursuant to this Section shall take place in Rochester, New York. A final award shall be rendered as soon as reasonably possible and, in any event, within ninety (90) days of the appointment of the panel of arbitrators;

provided, however, that if the arbitrators determine by majority vote that fairness so requires, such ninety (90) day period may be extended by no more than sixty (60) additional days. The parties agree that the arbitrators shall have the right and power to shorten the length of any notice periods or other time periods provided in the AAA Rules and to implement Expedited Procedures under the AAA Rules in order to ensure that the arbitration process is completed within the time frames provided herein. The arbitration decision or award shall be reasoned and in writing. Judgment on the decision or award rendered by the arbitrators may be entered and specifically enforced in any court having jurisdiction thereof. Notwithstanding the provisions of Section 10.5, any arbitration held pursuant to the provisions of the Section shall be governed by the Federal Arbitration Act. All arbitrations commenced pursuant to this Agreement while any other arbitration hereunder shall be in progress shall be consolidated and heard by the initially constituted panel of arbitrators.

SECTION 10.10 **No Third Party Beneficiary**. There are no third party beneficiaries of this Agreement.

SECTION 10.11 **Expenses**. Following the date of this Agreement, except for the payment of the Registration Expenses set forth in Section 2.3, the parties to this Agreement hereby agree that each party shall pay all fees, costs and expenses incurred by such party or on such party's behalf in connection with this Agreement.

SECTION 10.12 **Severability**. Titles and Subtitles: Gender; Singular and Plural; Counterparts; Facsimile.

(a) In case any provision of this Agreement shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby.

(b) The titles of the sections and subsections of this Agreement are for convenience of reference only and are not to be considered in construing this Agreement.

(c) The use of any gender in this Agreement shall be deemed to include the other genders, and the use of the singular in this Agreement shall be deemed to include the plural (and vice versa), wherever appropriate.

(d) This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together constitute one instrument.

(e) Counterparts of this Agreement (or applicable signature pages hereof) that are manually signed and delivered by facsimile transmission shall be deemed to constitute signed original counterparts hereof and shall bind the parties signing and delivering in such manner.

IN WITNESS WHEREOF, this Agreement has been executed as of the date set forth first above.

COMPANY:

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President and CEO

Schedule A

List of Holders

Names and Addresses of Investors

Monte Bricker
[Address]

John E. Mooney Defined Benefit Plan
[Address]

Jeffrey Cerini
[Address]

Tulkin-Kapchan Revocable Trust UDT
[Address]

Marilyn J. Eichelberger
[Address]

Pan Atlantic Bank and Trust Limited
Musson Building, 3rd Floor
Hincks Street, P.O. Box 982
Bridgetown, Barbados, West Indies
Attn: Mr. Anscele Payne

Paul Feldman
[Address]

Vaccinex 2002 L.P.
BCE Place, 181 Bay Street, Suite 250
Toronto, Ontario
Canada M5J 2T3

Names and Addresses of Series A Investors

Deepak M. Sahasrabudhe
[Address]

Pan Atlantic Bank and Trust Limited
Musson Building, 3rd Floor
Hincks Street, P.O. Box 982
Bridgetown, Barbados, West Indies
Attn: Mr. Anscele Payne

Louis Zauderer
[Address]

Name and Addresses of Founders

Maurice Zauderer
[Address]

Deepak M. Sahasrabudhe
[Address]

Name and Addresses of Common Stock Holders

Zauderer Family Trust
[Address]

Vaccinex (Ontario), L.P.
BCE Place, 181 Bay Street, Suite 250
Toronto, Ontario
Canada M5J 2T3

Schedule A

Updated List of Holders as of September 4, 2003

Names and Addresses of Investors

Monte Bricker
[Address]

Paul Feldman
[Address]

Tulkin-Kapchan Revocable Trust UDT
[Address]

Jeffrey Cerini
[Address]

William Hoffman
[Address]

John E. Mooney Defined Benefit Plan
[Address]

Marilyn J. Eichelberger
[Address]

Kathleen Mooney
[Address]

Vaccinex 2002 L.P.
BCE Place, 181 Bay Street, Suite 250
Toronto, Ontario
Canada M5J 2T3

Jeremy Fineberg
[Address]

Pan Atlantic Bank and Trust Limited
Musson Building, 3rd Floor
Hincks Street, P.O. Box 982
Bridgetown, Barbados, West Indies
Attn: Mr. Anscele Payne

Names and Addresses of Series A Investors

Deepak M. Sahasrabudhe
[Address]

Pan Atlantic Bank and Trust Limited
Musson Building, 3rd Floor
Hincks Street, P.O. Box 982
Bridgetown, Barbados, West Indies
Attn: Mr. Anscele Payne

Louis Zauderer
[Address]

Name and Addresses of Founders

Maurice Zauderer
[Address]

Deepak M. Sahasrabudhe
[Address]

Name and Addresses of Common Stock Holders

Zauderer Family Trust
[Address]

Vaccinex (Ontario), L.P.
BCE Place, 181 Bay Street, Suite 250
Toronto, Ontario
Canada M5J 2T3

Series B Investor Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person is an "Investor" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

_____

Name of Investor *(Print or Type)*

_____

Signature of Investor

ENTITY INVESTOR:

Pan Atlantic Bank and Trust Limited
Name of Entity *(Print or Type)*

By: /s/ Anscele R.B. Payne
Signature of Authorized Officer

Anscele R.B. Payne, Managing Director
Name and Title of Authorized Officer
(Print or Type)

[Investor Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Series B Investor Signature Page

INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person is an "Investor" as defined in the Investor Rights Agreement dated as of the date set forth on the Company's signature page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the Investor Rights Agreement.

INDIVIDUAL INVESTOR:

William Hoffman

Name of Investor *(Print or Type)*

/s/ William Hoffman

Signature of Investor

ENTITY INVESTOR:

Name of Entity *(Print or Type)*

By: _____

Signature of Authorized Officer

Name and Title of Authorized Officer
(Print or Type)

[Investor Signature Page to Vaccinex, Inc. Investor Rights Agreement]

Series B Investor Signature Page

INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person is an "Investor" as defined in the Investor Rights Agreement dated as of the date set forth on the Company's signature page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Jeremy Fineberg

Name of Investor *(Print or Type)*

/s/ Jeremy Fineberg

Signature of Investor

ENTITY INVESTOR:

Name of Entity *(Print or Type)*

By: _____

Signature of Authorized Officer

Name and Title of Authorized Officer
(Print or Type)

[Investor Signature Page to Vaccinex, Inc. Investor Rights Agreement]

Series B Investor Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person is an "Investor" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Name of Investor *(Print or Type)*

Signature of Investor

ENTITY INVESTOR:

Vaccinex 2002 L.P.
by its General Partner Vaccinex GP Ltd.

Name of Entity *(Print or Type)*

By: /s/ Henry Fenig
Signature of Authorized Officer

Henry Fenig, Vice President
Name and Title of Authorized Officer
(Print or Type)

Series B Investor Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person is an "Investor" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Kathleen Mooney

Name of Investor *(Print or Type)*

/s/ Kathleen Mooney

Signature of Investor

ENTITY INVESTOR:

Name of Entity *(Print or Type)*

By: _____

Signature of Authorized Officer

Name and Title of Authorized Officer
(Print or Type)

[Investor Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Series A Holder Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (1) such Person is a "Series A Holder" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Deepak M. Sahasrabudhe

Name of Investor *(Print or Type)*

/s/ Deepak M. Sahasrabudhe

Signature of Investor

ENTITY INVESTOR:

Name of Entity *(Print or Type)*

By: _____

Signature of Authorized Officer

Name and Title of Authorized Officer
(Print or Type)

[Series A Holder Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Series A Holder Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (1) such Person is a "Series A Holder" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Name of Investor *(Print or Type)*

Signature of Investor

ENTITY INVESTOR:

Pan Atlantic Bank and Trust Limited

Name of Entity *(Print or Type)*

By: /s/ Anscele R.B. Payne

Signature of Authorized Officer

Anscele R.B. Payne, Managing Director

Name and Title of Authorized Officer
(Print or Type)

[Series A Holder Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Founder Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (1) such Person is a "Founder" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

/s/ Deepak Sahasrabudhe

Name: Deepak Sahasrabudhe
(Print or Type)

[Founder Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Founder Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (1) such Person is a "Founder" as defined in the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph on the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, (ii) such Person is a party to the First Amended and Restated Investor Rights Agreement for all purposes, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

/s/ Maurice Zauderer

Name: Maurice Zauderer
(Print or Type)

[Founder Signature Page to Vaccinex, Inc. First Amended and Restated Investor Rights Agreement]

Common Stockholder Signature Page

FIRST AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

By executing this page in the space provided, the undersigned Person hereby agrees that (i) such Person holds Common Stock of the Vaccinex, Inc., (ii) such Person understands and consents to the provisions of Section 10.3 of the First Amended and Restated Investor Rights Agreement dated as of the date set forth in the introductory paragraph of the first page thereto among Vaccinex, Inc. and the persons listed on **Schedule A** thereto, and (iii) such Person is bound by all terms and conditions of the First Amended and Restated Investor Rights Agreement.

INDIVIDUAL INVESTOR:

Name of Investor *(Print or Type)*

Signature of Investor

ENTITY INVESTOR:

Vaccinex (Ontario), L.P.
by its General Partner Vaccinex GP Ltd.

Name of Entity *(Print or Type)*

By: /s/ Henry Fenig
Signature of Authorized Officer

Henry Fenig, Vice President
Name and Title of Authorized Officer
(Print or Type)

Exhibit 10.2

VACCINEX, INC.

2001 EMPLOYEE EQUITY PLAN

TABLE OF CONTENTS

SECTION 1
PURPOSE

The purpose of this Plan is to promote the interests of Vaccinex and its related companies by providing for the grant of Options and Stock Appreciation Rights and for Stock Grants to Key Employees and Directors in order (a) to encourage a sense of proprietorship on the part of Key Employees and Directors who will be largely responsible for the continued growth of Vaccinex, (b) to furnish such Key Employees and Directors with further incentive to develop and promote the business and financial success of Vaccinex, and (c) to induce such Key Employees and Directors to continue in the service of Vaccinex, by providing a means by which such selected individuals may purchase stock in Vaccinex.

SECTION 2
DEFINITIONS

Each term set forth in this Section 2 has the meaning set forth opposite such term for purposes of this Plan and, for purposes of such definitions, the singular includes the plural and the plural includes the singular.

2.1. ***"Affiliate"*** — means any organization (other than a Subsidiary) that would be treated as under common control with Vaccinex under § 414(c) of the Code if "50 percent" were substituted for "80 percent" in the income tax regulations under § 414(c) of the Code.

2.2. ***"Board"*** — means the Board of Directors of Vaccinex.

2.3. ***"Code"*** — means the Internal Revenue Code of 1986, as amended.

2.4. ***"Committee"*** — means a committee of the Board (whether an Executive Committee, Compensation Committee, Stock Option Committee or other committee designated by the Board) appointed to administer this Plan, each member of which shall be appointed by and shall serve at the pleasure of the Board; provided that if Vaccinex becomes subject to Rule 16 of the 1934 Act and a publicly held corporation (as defined in § 162(m) of the Code), such committee thereafter shall have at least 2 members, each of whom shall come within the definition of "non-employee director" under Rule 16b-3 and "outside director" under § 162(m) of the Code.

2.5. ***"Director"*** — means any member of the Board who is not an employee of Vaccinex or a Parent or Subsidiary.

2.6. ***"Fair Market Value"*** — means as of any date (a) the price that the Committee acting in good faith determines through any reasonable valuation method that a share of Stock might change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of the relevant facts; provided, however, if the Stock is publicly traded on such date, "Fair Market Value" means (b) the closing price on such date for a share of Stock as reported by The Wall Street Journal under the quotation system under which such closing price is reported or, if The Wall Street Journal does not report such closing price, such closing price as reported by a newspaper or trade journal selected by the Committee or, if no such closing price is available on such date, (c) such closing price as so reported in accordance with Section 2.6(b) for the immediately preceding business day or, if no newspaper or trade journal reports such closing price or if no such price quotation is available, (d) the price as determined in accordance with Section 2.6(a).

2.7. ***"ISO"*** — means an option granted under this Plan to purchase Stock that is intended to satisfy the requirements of § 422 of the Code.

2.8. ***"Key Employee"*** — means an employee of Vaccinex or any Parent, Subsidiary or Affiliate, or a non-employee consultant or advisor retained by Vaccinex or any Parent, Subsidiary or Affiliate, designated by the Committee who, in the judgment of the Committee acting in its absolute discretion, is a key directly or indirectly to the success of Vaccinex.

2.9. ***"1933 Act"*** — means the Securities Act of 1933, as amended.

2.10. ***"NQO"*** — means an option granted under this Plan to purchase Stock that by its terms provides that it will not be treated as an incentive stock option under § 422 of the Code or that fails to satisfy the requirements of § 422 of the Code.

2.11. ***"Option"*** — means an ISO or a NQO.

2.12. ***"Option Agreement"*** — means the written agreement or instrument that sets forth the terms of an Option granted to a Key Employee or Director under this Plan.

2.13. ***"Option Price"*** — means the price payable to purchase one share of Stock upon the exercise of an Option granted under this Plan.

2.14. ***"Parent"*** — means any corporation that is a parent corporation (within the meaning of § 424(e) of the Code) of Vaccinex.

2.15. ***"Plan"*** — means this Vaccinex, Inc. 2001 Employee Equity Plan, as amended from time to time.

2.16. ***"SAR Value"*** — means the value assigned by the Committee to a share of Stock in connection with the grant of a Stock Appreciation Right under Section 10.

2.17. ***"Stock"*** — means the $ 0.0001 par value Common Stock of Vaccinex.

2.18. ***"Stock Appreciation Right"*** — means a right to receive the appreciation in a share of Stock which is granted under Section 10.

2.19. ***"Stock Appreciation Right Certificate"*** — means the written certificate which sets forth the terms and conditions of a Stock Appreciation Right which is not granted to a Key Employee as part of an Option.

2.20. ***"Stock Grant"*** — means Stock granted under Section 11.

2.21. ***"Stock Grant Certificate"*** — means the written agreement which sets forth the terms and conditions of a Stock Grant.

2.22. ***"Subsidiary"*** — means any corporation that is a subsidiary corporation (within the meaning of § 424(f) of the Code) of Vaccinex.

2.23. ***"Ten Percent Shareholder"*** — means a person who owns (after taking into account the attribution rules of § 424(d) of the Code) more than 10% of the total combined voting power of all classes of stock of any of Vaccinex, a Parent or a Subsidiary.

2.24. ***"Vaccinex"*** — means Vaccinex, Inc. a Delaware corporation, and any successor to such corporation.

SECTION 3
SHARES RESERVED UNDER PLAN

There shall (subject to Section 15) be 2 million (2,000,000) shares of Stock reserved for use under this Plan, and no more than such number of shares shall (subject to Section 15) be issued in connection with the exercise of ISOs. Such shares of Stock shall be reserved to the extent that Vaccinex deems appropriate from authorized but unissued shares of Stock and from shares of Stock that have been reacquired by Vaccinex. Any shares of Stock subject to an Option or Stock Grant that remain unissued after the cancellation, expiration or exchange of such Option or Stock Grant for another Option or Stock Grant or which are forfeited after issuance and any shares of Stock subject to issuance under a Stock Appreciation Right which remain unissued after the cancellation or expiration of such Stock Appreciation Right thereafter shall again become available for issuance under this Plan, but any shares of Stock used to satisfy a withholding obligation shall not again be available for use under this Plan. Finally, if the

Option Price under an Option is paid in whole or in part in shares of Stock or if shares of Stock are tendered to Vaccinex in satisfaction of any condition to a Stock Grant, such shares thereafter shall become available for issuance under this Plan and shall be treated the same as any other shares available for issuance under this Plan.

SECTION 4
EFFECTIVE DATE

The effective date of this Plan shall be the date the Plan is adopted by the Board, provided Vaccinex's shareholders (acting at a duly called meeting of such shareholders) approve the establishment of this Plan within 12 months before or after such effective date. Any Option or Stock Appreciation Right granted or Stock Grant made before such shareholder approval automatically shall be granted subject to such approval. If there is no such approval by the shareholders of Vaccinex, the grant of any Options under this Plan shall be null and void.

SECTION 5
ADMINISTRATION

This Plan shall be administered by the Committee. If at any time the Board shall have not appointed a Committee to administer the Plan, the Board shall administer the Plan (and any reference in the Plan to the Committee shall mean a reference to the Board.) The Committee, acting in its absolute discretion, shall exercise such powers and take such action as expressly called for under this Plan and, further, the Committee shall have the power to interpret this Plan, and the respective Option Agreements, Stock Grant Certificates, Stock Appreciation Right Certificates, and other documents entered into under this Plan, and to take such other action in the administration and operation of this Plan as the Committee deems equitable under the circumstances, which action shall be final and binding on Vaccinex, on each affected Key Employee and Director and on each other person directly or indirectly affected by such action.

SECTION 6
ELIGIBILITY AND GRANT CAPS

Key Employees and Directors shall be eligible for the grant of NQ0s or Stock Appreciation Rights or Stock Grants under this Plan. Only Key Employees who are current employees of Vaccinex or a Parent or Subsidiary shall be eligible for the grant of ISOs under this Plan. If Vaccinex becomes a publicly held corporation (as defined in § 162(m) of the Code), no Key Employee in any calendar year thereafter who is a covered employee for purposes of § 162(m) of the Code shall be granted an Option to purchase (subject to § 15) more than 1 million shares of Stock or a Stock Appreciation Right based on the appreciation with respect to (subject to § 15) more than 1 million shares of Stock.

SECTION 7
GRANT OF OPTIONS

7.1. Grant. The Committee acting in its absolute discretion shall have the right to grant Options to Key Employees and Directors under this Plan from time to time to purchase shares of Stock and, further, shall have the right to grant new Options in exchange for the cancellation of outstanding Options that have a higher or lower Option Price. Each grant of an Option shall be evidenced by an Option Agreement, and each Option Agreement shall

(a) specify whether the Option is an ISO or NQO, and

(b) set forth such other terms and conditions as the Committee acting in its absolute discretion deems consistent with the terms of this Plan, including (without limitation) a limitation on the number of shares subject to the Option which first become exercisable during any particular period.

If the Committee grants an ISO and a NQO to a Key Employee on the same date, the right of the Key Employee to exercise the ISO shall not be conditioned on his or her failure to exercise the NQO.

7.2. $100,000 Limit. No Option shall be treated as an ISO to the extent that the aggregate Fair Market Value of the shares of Stock subject to the Option (determined as of the date of grant of the Option) and any other incentive stock options granted to a Key Employee under this Plan and under any other stock option plan adopted by Vaccinex, a Parent or a Subsidiary that first become exercisable in any calendar year exceeds $100,000 or such other dollar limit as is specified by § 422(d) of the Code. The Committee shall interpret and administer the limitation set forth in this Section 7.2 in accordance with § 422(d) of the Code, and the Committee shall treat this Section 7.2 as in effect only for those periods for which § 422(d) of the Code is in effect.

SECTION 8
OPTION PRICE

The Option Price for each share of Stock subject to an ISO shall be set by the Committee at the time the Option is granted, but such price shall not be set at less than the Fair Market Value of a share of Stock on the date the ISO is granted or, if the ISO is granted to a Key Employee who is a Ten Percent Shareholder, the Option Price for each share of Stock subject to such ISO shall be no less than 110% of the Fair Market Value of a share of Stock on the date the ISO is granted. The Option Price for each share of Stock subject to a NQO may be less than the Fair Market Value of a share of Stock on the date the NQO is granted but shall under no circumstances be less than adequate consideration (as determined by the Committee) for such a share. The Option Price shall be payable in full upon the exercise of any Option, and an Option Agreement at the discretion of the Committee may provide for the payment of the Option Price either in cash or in Stock held by the Key Employee or Director or in any combination of cash and such Stock. If an Option Agreement allows the payment of the Option Price in whole or in part in Stock, such payment shall be made in Stock acceptable to the Committee which the Key Employee or Director has held for at least six months. Any payment made in Stock shall be treated as equal to the Fair Market Value of such Stock as of the date the properly endorsed certificate for such Stock is delivered to the Committee.

SECTION 9
EXERCISE PERIOD

Each Option granted under this Plan shall be exercisable in whole or in part at such time or times as set forth in the related Option Agreement, but no Option Agreement shall make an Option exercisable on or after the earlier of

(a) the date that is the fifth anniversary of the date the Option is granted, if the Option is an ISO and the Key Employee is a Ten Percent Shareholder on the date the Option is granted, or

(b) the date that is the tenth anniversary of the date the Option is granted, if the Option is a NQO or if the Option is an ISO and is granted to a Key Employee who is not a Ten Percent Shareholder on the date the Option is granted.

The Committee may (but shall not be obligated to) provide in an Option Agreement for the automatic acceleration of the vesting, in whole or in part, of an Option upon the occurrence of certain events, such as a merger or sale of Vaccinex.

An Option Agreement may provide for the exercise of an Option after the employment of a Key Employee or the service of a Director has terminated for any reason whatsoever, including death or disability; provided, however, to the extent an ISO remains or becomes exercisable on or after the last day of the three-consecutive-month period that immediately follows the last day of a Key Employee's continuous period of employment by Vaccinex, a Parent or a Subsidiary (other than as a result of death or total and permanent disability (within the meaning of § 22(e)(3) of the Code)), the Option after such date no longer will qualify for any special income tax benefits under § 422 of the Code. If a Key Employee terminates employment due to total and permanent disability, then to the extent an ISO remains or becomes exercisable on or after the last day of the one-year period that immediately follows the last day of the Key Employee's continuous period of employment by Vaccinex, a Parent or a Subsidiary, the Option after such date no longer will qualify for any special income tax benefits under § 422 of the Code. For purposes of this § 9 in the case of an ISO, an employment relationship will be treated as continuing during the period while a Key Employee is on military duty, sick leave or other bona fide leave of absence (as determined by the Committee) if the period of such leave does not exceed ninety days, or, if longer, so long as a statute or contract guarantees the Key Employee's right to re-employment with Vaccinex, a Parent or a Subsidiary.

SECTION 10
STOCK APPRECIATION RIGHTS

The Committee acting in its absolute discretion shall have the right to grant Stock Appreciation Rights to Key Employees or Directors under this Plan from time to time, and each Stock Appreciation Right grant shall be evidenced by a Stock Appreciation Right Certificate or, if such Stock Appreciation Right is granted as part of an Option, shall be evidenced by the Option Agreement for the related Option.

(a) Terms and Conditions.

(i) Stock Appreciation Right Certificate. If a Stock Appreciation Right is evidenced by a Stock Appreciation Right Certificate, such certificate shall set forth the number of shares of Stock on which the Key Employee's or Director's right to appreciation shall be based and the SAR Value of each share of Stock. Such SAR Value shall be no less than the Fair Market Value of a share of Stock on the date that the Stock Appreciation Right is granted. The Stock Appreciation Right Certificate shall set forth such other terms and conditions for the exercise of the Stock Appreciation Right as the Committee deems appropriate under the circumstances, but no Stock Appreciation Right Certificate shall make a Stock Appreciation Right exercisable on or after the date which is the tenth anniversary of the date such Stock Appreciation Right is granted.

(ii) Option Agreement. If a Stock Appreciation Right is evidenced by an Option Agreement, the number of shares of Stock on which the Key Employee's or Director's right to appreciation shall be based shall be the same as the number of shares of Stock subject to the related Option and the SAR Value for each such share of Stock shall be no less than the Option Price under the related Option. Each such Option Agreement

shall provide that the exercise of the Stock Appreciation Right with respect to any share of Stock shall cancel the Key Employee's or Director's right to exercise his or her Option with respect to such share and, conversely, that the exercise of the Option with respect to any share of Stock shall cancel the Key Employee's or Director's right to exercise his or her Stock Appreciation Right with respect to such share. A Stock Appreciation Right which is granted as part of an Option shall be exercisable only while the related Option is exercisable. The Option Agreement shall set forth such other terms and conditions for the exercise of the Stock Appreciation Right as the Committee deems appropriate under the circumstances.

(iii) Exercise. A Stock Appreciation Right shall be exercisable only when the Fair Market Value of a share of Stock on which the right to appreciation is based exceeds the SAR Value for such share, and the payment due on exercise shall be based on such excess with respect to the number of shares of Stock to which the exercise relates. A Key Employee or Director upon the exercise of his or her Stock Appreciation Right shall receive a payment from Vaccinex in cash or in Stock issued under this Plan, or in a combination of cash and Stock, and the number of shares of Stock issued shall be based on the Fair Market Value of a share of Stock on the date the Stock Appreciation Right is exercised. The Committee acting in its absolute discretion shall have the right to determine the form and time of any payment under this Section 10.

SECTION 11
STOCK GRANTS

The Committee acting in its absolute discretion shall have the right to make Stock Grants to Key Employees and to Directors. Each Stock Grant shall be evidenced by a Stock Grant Certificate, and each Stock Grant Certificate shall set forth the conditions, if any, under which Stock will be issued under the Stock Grant and the conditions under which the Key Employee's or Director's interest in any Stock which has been issued will become non-forfeitable.

(a) Conditions.

(i) Conditions to issuance of Stock. The Committee acting in its absolute discretion may make the issuance of Stock under a Stock Grant subject to the satisfaction of one, or more than one, condition which the Committee deems appropriate under the circumstances for Key Employees or Directors generally or for a Key Employee or a Director in particular, and the related Stock Grant Certificate shall set forth each such condition and the deadline for satisfying each such condition. Stock subject to a Stock Grant shall be issued in the name of a Key Employee or Director only after each such condition, if any, has been timely satisfied, and any Stock which is so issued shall be held by Vaccinex pending the satisfaction of the forfeiture conditions, if any, under Section 11(a)(ii) for the related Stock Grant.

(ii) Forfeiture Conditions. The Committee acting in its absolute discretion may make Stock issued in the name of a Key Employee or Director subject to one, or more than one, objective employment,

performance or other forfeiture condition that the Committee acting in its absolute discretion deems appropriate under the circumstances for Key Employees or Directors generally or for a Key Employee or a Director in particular, and the related Stock Grant Certificate shall set forth each such forfeiture condition, if any, and the deadline, if any, for satisfying each such forfeiture condition. A Key Employee's or a Director's non-forfeitable interest in the shares of Stock underlying a Stock Grant shall depend on the extent to which he or she timely satisfies each such condition. Each share of Stock underlying a Stock Grant shall be unavailable under Section 3 after such grant is effective unless such share thereafter is forfeited as a result of a failure to timely satisfy a forfeiture condition, in which event such share of Stock shall again become available under Section 3 as of the date of such forfeiture.

(iii) Dividends and Voting Rights. If a cash dividend is paid on a share of Stock after such Stock has been issued under a Stock Grant but before the first date that a Key Employee's or a Director's interest in such Stock (1) is forfeited completely or (2) becomes completely non-forfeitable, Vaccinex shall pay such cash dividend directly to such Key Employee or Director. If a Stock dividend is paid on such a share of Stock during such period, such Stock dividend shall be treated as part of the related Stock Grant, and a Key Employee's or a Director's interest in such Stock dividend shall be forfeited or shall become non-forfeitable at the same time as the Stock with respect to which the Stock dividend was paid is forfeited or becomes non-forfeitable. The disposition of each other form of dividend which is declared on such a share of Stock during such period shall be made in accordance with such rules as the Committee shall adopt with respect to each such dividend. A Key Employee or a Director also shall have the right to vote the Stock issued under his or her Stock Grant during such period.

(iv) Satisfaction of Forfeiture Conditions. A share of Stock shall cease to be subject to a Stock Grant at such time as a Key Employee's or a Director's interest in such Stock becomes non-forfeitable under this Plan, and the certificate representing such share shall be transferred to the Key Employee or Director as soon as practicable thereafter.

SECTION 12
NONTRANSFERABILITY

No Option, Stock Grant or Stock Appreciation Right shall (absent the Committee's consent) be transferable by a Key Employee or Director other than by will or by the laws of descent and distribution, and any Option or Stock Appreciation Right shall (absent the Committee's consent) be exercisable during the lifetime of a Key Employee or Director only by such Key Employee or Director. The person or persons to whom an Option or Stock Grant or Stock Appreciation Right is transferred by will or by the laws of descent and distribution (or with the Committee's consent) thereafter shall be treated as the Key Employee or Director under this Plan.

SECTION 13
SECURITIES REGISTRATION AND RESTRICTIONS

13.1. Investment Representation. As a condition to the receipt of shares of Stock under this Plan, a Key Employee or a Director shall, if so requested by Vaccinex, agree to hold such shares of Stock for investment and not with a view of resale or distribution to the public and, if so requested by Vaccinex, shall deliver to Vaccinex a written statement satisfactory to Vaccinex to that effect. Furthermore, if so requested by Vaccinex, a Key Employee or Director shall make a written representation to Vaccinex that he or she will not sell or offer for sale any of such Stock unless a registration statement shall be in effect with respect to such Stock under the 1933 Act and any applicable state securities law or he or she shall have furnished to Vaccinex an opinion in form and substance satisfactory to Vaccinex of legal counsel satisfactory to Vaccinex that such registration is not required. Certificates representing the Stock transferred upon the exercise of an Option or Stock Appreciation Right or upon the lapse of the forfeiture conditions, if any, on any Stock Grant may, at the discretion of Vaccinex, bear a legend to the effect that the Key Employee or Director agrees to hold such Stock for investment and not with a view to resale or distribution to the public and that such Stock has not been registered under the 1933 Act or any applicable state securities law and that such Stock cannot be sold or offered for sale in the absence of an effective registration statement as to such Stock under the 1933 Act and any applicable state securities law or an opinion in form and substance satisfactory to Vaccinex of legal counsel satisfactory to Vaccinex that such registration is not required.

13.2. Registration or Qualification of Shares. If the Committee, in its sole discretion, determines that registration or qualification of shares is necessary or desirable, Vaccinex shall, at its expense, take such action as may be required to effect such registration or qualification. However, the Committee is under no obligation to effect any such registration or qualification.

SECTION 14
LIFE OF PLAN

No Option or Stock Appreciation Right shall be granted or Stock Grant made under this Plan on or after the earlier of (a) the tenth anniversary of the effective date of this Plan (as determined under Section 4), in which event this Plan shall continue in effect thereafter until all outstanding Options and Stock Appreciation Rights have been exercised in full or no longer are exercisable and all Stock issued under any Stock Grants under this Plan have been forfeited or have become non-forfeitable, or (b) the date on which all of the Stock reserved under Section 3 has (as a result of the exercise of Options or Stock Appreciation Rights or the satisfaction of the forfeiture conditions, if any, on Stock Grants) been issued or no longer is available for use under this Plan, in which event this Plan also shall terminate on such date.

SECTION 15
ADJUSTMENT

15.1. Adjustment. The number, kind or class (or any combination thereof) of shares of Stock reserved under Section 3, the annual grant caps described in Section 6, the number, kind or class (or any combination thereof) of shares of Stock subject to Options or Stock Appreciation Rights granted under this Plan and the Option Price of such Options and the SAR Value of such Stock Appreciation Rights as well as the number, kind or class (or any combination thereof) of shares of Stock subject to Stock Grants under this Plan shall be adjusted by the Committee in an equitable manner to reflect any change in the capitalization of Vaccinex resulting from a stock dividend or stock split. The Committee as part of any corporate transaction described in § 424(a) of the Code, including, without limitation, stock dividends or stock splits, shall have the right to adjust (in any manner which the Committee in its discretion deems consistent with § 424(a) of the Code) the number, kind or class (or any combination thereof) of shares of Stock reserved

under Section 3 and the annual grant caps described in Section 6. Furthermore, the Committee as part of any such corporate transaction described in § 424(a) of the Code shall have the right to adjust (in any manner which the Committee in its discretion deems consistent with § 424(a) of the Code) the number, kind or class (or any combination thereof) of shares of Stock subject to any outstanding Stock Grants under this Plan and any related grant conditions and forfeiture conditions, and the number, kind or class (or any combination thereof) of shares subject to Option and Stock Appreciation Right grants previously made under this Plan and the related Option Price and SAR Value for each such Option and Stock Appreciation Right, and, further, shall have the right (in any manner which the Committee in its discretion deems consistent with § 424(a) of the Code without regard to the annual grant caps described in Section 6) to make any Stock Grants and Option and Stock Appreciation Right grants to effect the assumption of, or the substitution for, stock grants and option and stock appreciation right grants previously made by any other corporation to the extent that such corporate transaction calls for such substitution or assumption of such stock grants and stock option and stock appreciation right grants.

15.2. Fractional Shares. If any adjustment under this Section 15 would create a fractional share of Stock or a right to acquire a fractional share of Stock, such fractional share shall be disregarded and the number of shares of Stock reserved under this Plan and the number subject to any Options or Stock Appreciation Right grants and Stock Grants shall be the next lower number of shares of Stock, rounding all fractions downward. An adjustment made under this Section 15 by the Committee shall be conclusive and binding on all affected persons and, further, shall not constitute an increase in "the number of shares of Stock reserved under Section 3" within the meaning of Section 16.

SECTION 16
AMENDMENT OR TERMINATION

This Plan may be amended by the Board from time to time to the extent that the Board deems necessary or appropriate; provided, however, no amendment shall be made absent the approval of the shareholders of Vaccinex to the extent such approval is required under § 422 of the Code (a) to increase the number of shares of Stock reserved under Section 3 which can be issued upon the exercise of ISOs or (b) to change the class of employees eligible for Options which are ISOs. The Board also may suspend granting Options or Stock Appreciation Rights or making Stock Grants under this Plan at any time and may terminate this Plan at any time; provided, however, the Board shall not have the right unilaterally to modify, amend or cancel any Option or Stock Appreciation Right granted or Stock Grant made before such suspension or termination unless (x) the Key Employee or Director consents in writing to such modification, amendment or cancellation or (y) there is a dissolution or liquidation of Vaccinex or a transaction described in Section 15.

SECTION 17
MISCELLANEOUS

17.1. Company Right to Redeem Options. Every vested Option shall be redeemable, in whole or in part, by Vaccinex at any time, in its discretion. The purchase price for any Option redeemed by Vaccinex shall be the Fair Market Value of the shares of Stock subject to the Option, less the Option Price for the shares of Stock. The purchase price, less any amount of federal and states taxes attributable to the redemption that the Committee, in its discretion, deems necessary or advisable to withhold, shall be paid to Key Employee or Director in cash, by promissory note or in Stock, or in any combination of the foregoing, as determined in the absolute discretion of the Committee.

17.2. Shareholder Rights. No Key Employee or Director shall have any rights as a shareholder of Vaccinex as a result of the grant of an Option or Stock Appreciation Right to him or to her or his or her exercise of such Option or Stock Appreciation Right pending the actual delivery of the Stock subject to such Option or Stock Appreciation Right to such Key Employee or Director. Subject to Section 11(a)(iii), a Key Employee's or a Director's rights as a shareholder in the shares of Stock underlying a Stock Grant which is effective shall be set forth in the related Stock Grant Certificate.

17.3. No Contract of Employment. The grant of an Option or Stock Appreciation Right or a Stock Grant to a Key Employee or Director under this Plan shall not constitute a contract of employment or a right to continue to serve on the Board and shall not confer on a Key Employee or Director any rights upon his or her termination of employment or services as a Director in addition to those rights, if any, expressly set forth in the Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate.

17.4. Shareholder Agreement. Vaccinex shall have the right to require a Key Employee or Director to enter into such employment, shareholder, buy-sell, right of first refusal or other agreement or agreements that Vaccinex deems appropriate under the circumstances as a condition to the grant or to the exercise of any Option or Stock Appreciation Right or as a condition to a Stock Grant or the issuance of Stock subject to a Stock Grant.

17.5. Withholding. Each Option, Stock Appreciation Right and Stock Grant shall be made subject to the condition that the Key Employee or Director consents to whatever action the Committee directs to satisfy the federal and state tax withholding requirements, if any, that the Committee in its discretion deems applicable to the exercise of such Option or Stock Appreciation Right or the satisfaction of any forfeiture conditions with respect to Stock subject to such Stock Grant. The Committee also shall have the right to provide in an Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate that a Key Employee or Director may elect to satisfy federal and state tax withholding requirements through a reduction in the cash or the number of shares of Stock actually transferred to him or to her under this Plan.

17.6. Information Obligation. Prior to the initial public offering of the Stock, to the extent required by applicable law, Vaccinex shall deliver financial statements at least annually to Key Employees who have received Options. This § 17.6 shall not apply to Key Employees whose duties in connection with Vaccinex assure them access to equivalent information.

17.7. Application of Proceed. The proceeds of the sale of shares of Stock by Vaccinex under this Plan will constitute general funds of Vaccinex and may be used for any purpose.

17.8. Liability of Company. Vaccinex, any Parent or any Subsidiary, shall not be liable to a Key Employee or Director as to:

(a) *Non-Issuance of Shares*. The non-issuance or sale of shares of Stock as to which Vaccinex has been unable to obtain from any regulatory body having jurisdiction the authority deemed by counsel of Vaccinex to be necessary to the lawful issuance and sale of any shares hereunder.

(b) *Tax Consequences*. Any tax consequences expected but not realized by any Key Person or Director due to the exercise of any Option or Stock Appreciation Right or the satisfaction of any forfeiture conditions with respect to Stock subject to a Stock Grant.

17.9. Construction. This Plan shall be construed under the laws of the State of **[Delaware]**. The headings in this Plan are for convenience of reference purposes only. All references to sections are to sections of this Plan unless otherwise indicated.

17.10. Rule 16b-3. The Committee shall have the right to amend any Option, Stock Appreciation Right or Stock Grant to withhold or otherwise restrict the transfer of any Stock or cash under this Plan to a Key Employee or Director as the Committee deems appropriate in order to satisfy any condition or requirement under Rule 16b-3 to the extent Rule 16 of the 1934 Act might be applicable to such grant or transfer.

17.11. Loans. If approved by the Committee, Vaccinex may lend money to, or guarantee loans made by a third party to, any Key Employee or Director to finance all or a part of the exercise of any Option granted under this Plan or the purchase of any Stock subject to a Stock Grant under this Plan, and the exercise of an Option or the purchase of any such Stock with the proceeds of any such loan shall be treated as an exercise or purchase for cash under this Plan.

17.12. Provision for Income Taxes. The Committee acting in its absolute discretion shall have the power to authorize and direct Vaccinex to pay a cash bonus (or to provide in the terms of an Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate for Vaccinex to make such payment) to a Key Employee or Director to pay all, or any portion of, his or her federal, state and local income tax liability which the Committee deems attributable to his or her exercise of an Option or Stock Appreciation Right or his or her interest in the shares of Stock issued under his or her Stock Grant becoming non-forfeitable and, further, to pay any such tax liability attributable to such cash bonus.

Exhibit 10.3

VACCINEX, INC.
2001 EMPLOYEE EQUITY PLAN
INCENTIVE STOCK OPTION AGREEMENT

GRANT

This Option Agreement evidences the grant by Vaccinex, Inc. ("Vaccinex"), in accordance with the Vaccinex, Inc. 2001 Employee Equity Plan (the "Plan"), of an Incentive Stock Option ("ISO") to ("Key Employee") to purchase from Vaccinex shares of $0.0001 par value common stock of Vaccinex (the "Stock") at an Option Price per share equal to $. This ISO is granted effective as of (the "Grant Date"). Vaccinex intends that this ISO constitute an incentive stock option under § 422 of the Code.

VACCINEX, INC.

By: _____
Maurice Zauderer, President

TERMS AND CONDITIONS

§ 1 Plan. This ISO is subject to all of the terms and conditions set forth in the Plan and this Option Agreement, and all capitalized terms not otherwise defined in this Option Agreement shall have the respective meaning of such terms as defined in the Plan. If a determination is made that any term or condition set forth in this Option Agreement is inconsistent with the Plan, the Plan shall control. A copy of the Plan will be made available to Key Employee upon written request to the Secretary of Vaccinex.

§ 2 Exercise Rights.

(a) General Rule. Key Employee automatically shall have the right under this Option Agreement to exercise this ISO with respect to 20% of the number of shares of Stock underlying the grant of this ISO (shares) if Key Employee remains an employee of Vaccinex through each anniversary of the Grant Date beginning on the first anniversary date, .

(b) Special Rules.

(1) Termination. If Key Employee's employment with Vaccinex terminates for any reason other than death, "Disability" (as defined in § 2(c)) or "Cause" (as defined in § 2(c)), Key Employee's right under § 2(a) to exercise this ISO shall expire 3 months after the date employment so terminates or on the date described in § 3, whichever comes first.

(2) Termination for Cause. If Vaccinex terminates Key Employee's employment as a result of "Cause" (as defined in § 2(c)), Key Employee shall forfeit Key Employee's right under § 2(a) to exercise this ISO at the time Key Employee's employment terminates.

(3) Death or Disability. If Key Employee's employment with Vaccinex terminates by reason of Key Employee's death or "Disability" (as defined in § 2(c)), Key Employee or Key Employee's estate (whichever is applicable) shall have the right to exercise this ISO until the earlier of (A) the first anniversary of the date Key Employee's employment so terminates or (B) the date described in § 3, after which time this ISO shall expire immediately and automatically.

(c) Definitions.

(1) Cause. For purposes of this Option Agreement, "Cause" shall exist if Key Employee (A) commits any act of malfeasance or wrongdoing effecting Vaccinex or any Subsidiary, monetarily or otherwise, (B) breaches any employment agreement, covenant not to compete, or nonsolicitation and nondisclosure agreement, or (C) engages in conduct amounting to fraud, dishonesty, willful misconduct, negligence, repeated instances of insubordination, or conviction of a felony or a crime involving moral turpitude, all as determined in the exercise of good faith by the Committee.

(2) Disability. For purposes of this Option Agreement, the term "Disability" means "permanent and total disability" as defined in § 22(e)(3) of the Code.

(d) Employment Status. A transfer between Vaccinex and a Subsidiary or between Subsidiaries shall not be treated as a termination of employment with Vaccinex under the Plan or this Option Agreement.

§ 3 Life of ISO. This ISO shall expire and shall not be exercisable for any reason on or after the tenth anniversary of the Grant Date.

§ 4 Method of Exercise of ISO. Key Employee may exercise this ISO in whole or in part (to the extent this ISO is otherwise exercisable under § 2) on any normal business day of Vaccinex by (a) delivering this Option Agreement to Vaccinex, together with written notice of the exercise of the ISO, and (b) simultaneously paying to Vaccinex the Option Price. The payment of such Option Price shall be made either in cash, by check acceptable to Vaccinex, by delivery to Vaccinex of certificates (properly endorsed) for shares of Stock registered in Key Employee's name that have been held by Key Employee for at least 6 months, or in any combination of such cash, check, and Stock that results in payment in full of the Option Price. Stock that is so tendered as payment (in whole or in part) of the Option Price shall be valued at its Fair Market Value on the date the ISO is exercised.

§ 5 Delivery. Vaccinex shall deliver a properly issued certificate for any Stock purchased pursuant to the exercise of this ISO as soon as practicable after such exercise, and such delivery shall discharge Vaccinex of all of its duties and responsibilities with respect to this ISO.

§ 6 Nontransferable. No rights granted under this ISO shall be transferable by Key Employee other than by will or by the laws of descent and distribution, and the rights granted under this ISO shall be exercisable during Key Employee's lifetime only by Key Employee. The person or persons, if any, to whom this ISO is transferred by will or by the laws of descent and distribution shall be treated after Key Employee's death the same as Key Employee under this Option Agreement.

§ 7 No Right to Continue Service. Neither the Plan, this ISO, nor any related material shall give Key Employee the right to continue in employment by Vaccinex or any Subsidiary or shall adversely affect the right of Vaccinex or any Subsidiary to terminate Key Employee's employment with or without cause at any time.

§ 8 Stockholder Status. Key Employee shall have no rights as a stockholder with respect to any shares of Stock under this ISO until such shares have been duly issued and delivered to Key Employee and, except as expressly set forth in the Plan, no adjustment shall be made for dividends of any kind or description whatsoever or for distributions of other rights of any kind or description whatsoever respecting such Stock.

§ 9 Securities Registration. As a condition to the delivery of the certificate for any shares of Stock purchased pursuant to the exercise of this ISO, Key Employee shall, if so requested by Vaccinex, hold such shares of Stock for investment and not with a view of resale or distribution to the public and, if so requested by Vaccinex, shall deliver to Vaccinex a written statement satisfactory to Vaccinex to that effect.

§ 10 Other Laws. If any change in circumstances after the grant of this ISO would create a substantial risk for Vaccinex that the issuance or transfer of any Stock under this ISO to Key Employee at the time Key Employee tenders any payment to exercise this ISO would violate any applicable law or regulation, Vaccinex at that time shall (a) take such action as the Committee deems fair and reasonable and permissible under such law or regulation either (1) to continue to maintain the status of this ISO as outstanding until Key Employee can exercise this ISO without any substantial risk of such a violation or (2) to fully and fairly compensate Key Employee for the cancellation of this ISO and thereafter to cancel this ISO and (b) refund any payment made by Key Employee to exercise this ISO.

§ 11 Other Agreement. If so requested by the Committee, Key Employee shall (as a condition to the exercise of this ISO) enter into such additional shareholder, buy-sell or other agreement or agreements prepared by Vaccinex as Vaccinex deems appropriate, which may restrict the transfer of shares of Stock acquired pursuant to this ISO and provide for the repurchase of such Stock by Vaccinex under certain circumstances. The certificate(s) evidencing the Stock may include one or more legends that reference or describe the conditions upon exercise referenced in this § 11.

§ 12 Withholding. Vaccinex or a Subsidiary shall have the right upon the exercise of this ISO to take such action, if any, as Vaccinex or Subsidiary deems necessary or appropriate to satisfy any required federal and state tax withholding requirements arising out of the exercise of this ISO, including (but not limited to) withholding shares of Stock that otherwise would be transferred to Key Employee as a result of the exercise of this ISO to satisfy minimum statutory withholding requirements.

§ 13 Notice of Disqualifying Disposition. Key Employee shall notify Vaccinex in the event that prior to the later of two years after the date of grant of this ISO or one year after the transfer of shares of Stock to Key Employee pursuant to the exercise of this ISO, Key Employee disposes of such shares. Such notice shall state the date of disposition, the nature of the disposition and the price, if any, received for the shares upon disposition.

§ 14 Governing Law. The Plan and this ISO shall be governed by the laws of the State of Delaware.

§ 15 Binding Effect. This ISO shall be binding upon Vaccinex and Key Employee and their respective heirs, executors, administrators and successors.

§ 16 Headings and Sections. The headings contained in this Option Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this ISO. Any references to sections (§) in this Option Agreement shall be to sections (§) of this Option Agreement unless otherwise expressly stated as part of such reference.

Exhibit 10.4

VACCINEX, INC.

2011 EMPLOYEE EQUITY PLAN

TABLE OF CONTENTS

SECTION 1
PURPOSE

The purpose of this Plan is to promote the interests of Vaccinex and its related companies by providing for the grant of Options and Stock Appreciation Rights and for Stock Grants to Key Employees and Directors in order (a) to encourage a sense of proprietorship on the part of Key Employees and Directors who will be largely responsible for the continued growth of Vaccinex, (b) to furnish such Key Employees and Directors with further incentive to develop and promote the business and financial success of Vaccinex, and (c) to induce such Key Employees and Directors to continue in the service of Vaccinex, by providing a means by which such selected individuals may purchase stock in Vaccinex.

SECTION 2
DEFINITIONS

Each term set forth in this Section 2 has the meaning set forth opposite such term for purposes of this Plan and, for purposes of such definitions, the singular includes the plural and the plural includes the singular.

2.1. “Affiliate” — means any organization (other than a Subsidiary) that would be treated as under common control with Vaccinex under Section 414(b) of the Code if “50 percent” were substituted for “80 percent” in the income tax regulations under Section 414(b) of the Code.

2.2. “Board” — means the Board of Directors of Vaccinex.

2.3. “Code” — means the Internal Revenue Code of 1986, as amended.

2.4. “Change in Control” — means the occurrence, in a single transaction or in a series of related transactions, of any one or more of the following events:

(a) any 1934 Act Person becomes the owner, directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the combined voting power of the Company’s then outstanding securities other than by virtue of a merger, consolidation or similar transaction. Notwithstanding the foregoing, a Change in Control shall not be deemed to occur (i) on account of the acquisition of securities of the Company by an investor, any affiliate thereof or any other 1934 Act Person from the Company in a transaction or series of related transactions the primary purpose of which is to obtain financing for the Company through the issuance of equity securities or (ii) solely because the level of ownership held by any 1934 Act Person (the “Subject Person”) exceeds the designated percentage threshold of the outstanding voting securities as a result of a repurchase or other acquisition of voting securities by the Company reducing the number of shares outstanding, provided that if a Change in Control would occur (but for the operation of this sentence) as a result of the acquisition of voting securities by the Company, and after such share acquisition, the Subject Person becomes the owner of any additional voting securities that, assuming the repurchase or other acquisition had not occurred, increases the percentage of the then outstanding voting securities owned by the Subject Person over the designated percentage threshold, then a Change in Control shall be deemed to occur;

(b) there is consummated a merger, consolidation or similar transaction involving (directly or indirectly) the Company and, immediately after the consummation of such merger, consolidation or similar transaction, the stockholders of the Company immediately prior thereto do not own, directly or indirectly, either (i) outstanding voting securities representing more than fifty percent (50%) of the combined outstanding voting power of the surviving entity in such merger, consolidation or similar transaction or (ii) more than fifty percent (50%) of the combined outstanding voting power of the parent of the surviving entity in such merger, consolidation or similar transaction, in each case in substantially the same proportions relative to each other as their ownership of the outstanding voting securities of the Company immediately prior to such transaction;

(c) the complete dissolution or liquidation of the Company;

(d) there is consummated a sale, lease, exclusive license or other disposition of all or substantially all of the consolidated assets of the Company and its Affiliates, other than a sale, lease, license or other disposition of all or substantially all of the consolidated assets of the Company and its Affiliates to an entity, more than fifty percent (50%) of the combined voting power of the voting securities of which are owned by stockholders of the Company in substantially the same proportions relative to each other as their ownership of the outstanding voting securities of the Company immediately prior to such sale, lease, license or other disposition; or

(e) individuals who, immediately following the Effective Date, are members of the Board (the "Incumbent Board") cease for any reason to constitute at least a majority of the members of the Board; (provided, however, that if the appointment or election (or nomination for election) of any new Board member was approved or recommended by a majority vote of the members of the Incumbent Board then still in office, such new member shall, for purposes of the Plan, be considered as a member of the Incumbent Board).

Notwithstanding the foregoing or any other provision of the Plan, the definition of Change in Control (or any analogous term) in an individual written agreement between the Company or any Affiliate and the Key Employee or Director shall supersede the foregoing definition with respect to Awards subject to such agreement; provided, however, that if no definition of Change in Control or any analogous term is set forth in such an individual written agreement, the foregoing definition shall apply.

2.5. "Committee" — means a committee of the Board (whether an Executive Committee, Compensation Committee, Stock Option Committee or other committee designated by the Board) appointed to administer this Plan, each member of which shall: (a) be appointed by and shall serve at the pleasure of the Board; provided that if Vaccinex becomes subject to Rule 16 of the 1934 Act and a publicly held corporation (as defined in Section 162(m) of the Code), such committee thereafter shall have at least 2 members, each of whom shall come within the definition of "non-employee director" under Rule 16b-3 and "outside director" under Section 162(m) of the Code; and (b) comply with the applicable requirements of the exchange upon which the Stock is traded.

2.6. “Director” — means any member of the Board who is not an employee of Vaccinex or a Parent or Subsidiary.

2.7. “Fair Market Value” — means as of any date (a) the price that the Committee acting in good faith and consistent with the requirements of Sections 422 and 409A of the Code for ISOs, and consistent with the requirements of Section 409A of the Code for NQOs and Stock Appreciation Rights, determines through any reasonable valuation method that a share of Stock might change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of the relevant facts; provided, however, if the Stock is publicly traded on such date, “Fair Market Value” means (b) the closing price on such date for a share of Stock as reported on the exchange upon which the shares of Stock are traded, or, if there is no such reported sale price of shares on the exchange on such date, then (c) such closing price as so reported in accordance with Section 2.7(b) for the last previous day on which a sale price was reported on the exchange, or such other value as determined by the Committee in accordance with applicable law.

2.8. “ISO” — means an Option granted under this Plan to purchase Stock that is intended to satisfy the requirements of Section 422 of the Code.

2.9. “Key Employee” — means an employee of Vaccinex or any Parent, Subsidiary or Affiliate, or a non-employee consultant or advisor retained by Vaccinex or any Parent, Subsidiary or Affiliate, designated by the Committee who, in the judgment of the Committee acting in its absolute discretion, is a key directly or indirectly to the success of Vaccinex.

2.10. “1933 Act” — means the Securities Act of 1933, as amended.

2.11. “1934 Act” — means the Securities Exchange Act of 1934, as amended.

2.12. “1934 Act Person” — means any natural person, entity or “group” (within the meaning of Section 13(d)(3) or 14(d)(2) of the 1934 Act), except that “1934 Act Person” shall not include (i) the Company or any Affiliate of the Company, (ii) any employee benefit plan of the Company or any Affiliate of the Company or any trustee or other fiduciary holding securities under an employee benefit plan of the Company or any Affiliate of the Company, (iii) an underwriter temporarily holding securities pursuant to an offering of such securities, (iv) an entity owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company; or (v) any natural person, entity or “group” (within the meaning of Section 13(d)(3) or 14(d)(2) of the 1934 Act) that, as of the Effective Date, is the owner, directly or indirectly, of securities of the Company representing more than fifty percent (50%) of the combined voting power of the Company’s then outstanding securities.

2.13. “NQO” — means an Option granted under this Plan to purchase Stock that by its terms provides that it will not be treated as an ISO or that fails to satisfy the requirements of Section 422 of the Code.

2.14. “Option” — means an ISO or a NQO.

2.15. “Option Agreement” — means the written agreement or instrument that sets forth the terms of an Option granted to a Key Employee or Director under this Plan.

2.16. “Option Price” — means the price payable to purchase one share of Stock upon the exercise of an Option granted under this Plan.

2.17. “Parent” — means any corporation that is a parent corporation (within the meaning of Section 424(e) of the Code) of Vaccinex.

2.18. “Plan” — means this Vaccinex, Inc. 2011 Employee Equity Plan, as amended from time to time.

2.19. “SAR Value” — means the value assigned by the Committee to a share of Stock in connection with the grant of a Stock Appreciation Right under Section 10.

2.20. “Stock” — means the $ 0.0001 par value Common Stock of Vaccinex.

2.21. “Stock Appreciation Right” — means a right to receive the appreciation in a share of Stock which is granted under Section 10.

2.22. “Stock Appreciation Right Certificate” — means the written certificate which sets forth the terms and conditions of a Stock Appreciation Right which is not granted to a Key Employee as part of an Option.

2.23. “Stock Grant” — means Stock granted under Section 11.

2.24. “Stock Grant Certificate” — means the written agreement which sets forth the terms and conditions of a Stock Grant.

2.25. “Subsidiary” — means any corporation that is a subsidiary corporation (within the meaning of Section 424(f) of the Code) of Vaccinex.

2.26. “Ten Percent Shareholder” — means a person who owns (after taking into account the attribution rules of Section 424(d) of the Code) more than 10% of the total combined voting power of all classes of stock of any of Vaccinex, a Parent or a Subsidiary.

2.27. “Vaccinex” — means Vaccinex, Inc. a Delaware corporation, and any successor to such corporation.

SECTION 3
SHARES RESERVED UNDER PLAN

There shall (subject to Section 15) be 97,270 shares of Stock reserved for use under this Plan, and no more than such number of shares shall (subject to Section 15) be issued in connection with the exercise of ISOs. Such shares of Stock shall be reserved to the extent that Vaccinex deems appropriate from authorized but unissued shares of Stock and from shares of Stock that have been reacquired by Vaccinex. Any shares of Stock subject to an Option or Stock Grant that remain unissued after the cancellation, expiration or exchange of such Option or Stock

Grant for another Option or Stock Grant or which are forfeited after issuance and any shares of Stock subject to issuance under a Stock Appreciation Right which remain unissued after the cancellation or expiration of such Stock Appreciation Right thereafter shall again become available for issuance under this Plan, but any shares of Stock used to satisfy a withholding obligation shall not again be available for use under this Plan. If shares of Stock are tendered to Vaccinex in satisfaction of any condition to a Stock Grant, such shares thereafter shall become available for issuance under this Plan and shall be treated the same as any other shares available for issuance under this Plan. Finally, shares of Stock shall not be deemed to have been issued pursuant to the Plan with respect to any portion of an Option, Stock Appreciation Right or Stock Grant that is settled in cash. Upon payment in shares of Stock pursuant to the exercise of a Stock Appreciation Right, the number of shares available for issuance under the Plan shall be reduced only by the number of shares actually issued in such payment. If the Option Price of an Option is paid by tender to Vaccinex, or attestation to the ownership, of shares of Stock owned by the Key Employee or Director, or by withholding shares of Stock otherwise issuable to the Key Employee or Director in connection with the exercise of the Option, the number of shares available for issuance under the Plan shall be reduced by the net number of shares for which the Option is exercised.

SECTION 4
EFFECTIVE DATE

The effective date of this Plan shall be the date the Plan is adopted by the Board, provided Vaccinex's stockholders approve the establishment of this Plan within 12 months before or after such effective date. Any Option or Stock Appreciation Right granted or Stock Grant made before such stockholder approval automatically shall be granted subject to such approval. If there is no such approval by the stockholders of Vaccinex, the grant of any Options, Stock Appreciation Rights or Stock Grants under this Plan shall be null and void.

SECTION 5
ADMINISTRATION

This Plan shall be administered by the Committee. If at any time the Board shall have not appointed a Committee to administer the Plan, the Board shall administer the Plan (and any reference in the Plan to the Committee shall mean a reference to the Board.) The Committee, acting in its absolute discretion, shall exercise such powers and take such action as expressly called for under this Plan and, further, the Committee shall have the power to:

(a) select the Key Employees and Directors to receive Options, Stock Appreciation Rights or Stock Grants;

(b) determine whether to grant an Option, Stock Appreciation Right or Stock Grant to any particular Key Employee or Director;

(c) determine the number of shares of Stock to be covered by each Option, Stock Appreciation Right or Stock Grant;

(d) determine the terms and conditions, not inconsistent with the provisions of the Plan, of any Option, Stock Appreciation Right or Stock Grant;

(e) determine whether, to what extent and under what circumstances Options and Stock Appreciation Rights may be settled in cash, shares of Stock or other property;

(f) determine whether, to what extent and under what circumstances any Option, Stock Appreciation Right or Stock Grant shall be canceled or suspended;

(g) interpret and administer the Plan and any Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate;

(h) correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate in the manner and to the extent that the Committee shall deem desirable to carry it into effect;

(i) establish such rules and regulations and appoint such agents as it shall deem appropriate for the proper administration of the Plan; and

(j) make any other determination and take any other action that the Committee deems necessary or desirable for the administration of the Plan. The decisions and actions of the Committee shall be final and binding on Vaccinex, on each affected Key Employee and Director and on each other person directly or indirectly affected by such action.

SECTION 6
ELIGIBILITY AND GRANT CAPS

Key Employees and Directors shall be eligible for the grant of NQ0s or Stock Appreciation Rights or Stock Grants under this Plan. Only Key Employees who are current employees of Vaccinex or a Parent or Subsidiary shall be eligible for the grant of ISOs under this Plan. If Vaccinex becomes a publicly held corporation (as defined in Section 162(m) of the Code), no Key Employee in any calendar year thereafter who is, or could be a covered employee for purposes of Section 162(m) of the Code, as determined by the Committee in its sole discretion, shall be granted an Option to purchase (subject to Section 15) more than 97,270 shares of Stock or a Stock Appreciation Right based on the appreciation with respect to (subject to Section 15) more than 97,270 shares of Stock.

SECTION 7
GRANT OF OPTIONS

7.1. Grant. The Committee acting in its absolute discretion shall have the right to grant Options to Key Employees and Directors under this Plan from time to time to purchase shares of Stock and, further, shall have the right to grant new Options in exchange for the cancellation of outstanding Options that have a higher or lower Option Price in a manner that complies with Section 409A of the Code. Each grant of an Option shall be evidenced by an Option Agreement, and each Option Agreement shall

(a) specify whether the Option is an ISO or NQO, and

(b) set forth such other terms and conditions as the Committee acting in its absolute discretion deems consistent with the terms of this Plan, including (without limitation) a limitation on the number of shares subject to the Option which first become exercisable during any particular period.

If the Committee grants an ISO and a NQO to a Key Employee on the same date, the right of the Key Employee to exercise the ISO shall not be conditioned on his or her failure to exercise the NQO.

7.2. $100,000 Limit. No Option shall be treated as an ISO to the extent that the aggregate Fair Market Value of the shares of Stock subject to the Option (determined as of the date of grant of the Option) and any other incentive stock options granted to a Key Employee under this Plan and under any other stock option plan adopted by Vaccinex, a Parent or a Subsidiary that first become exercisable in any calendar year exceeds $100,000 or such other dollar limit as is specified by Section 422(d) of the Code. The Committee shall interpret and administer the limitation set forth in this Section 7.2 in accordance with Section 422(d) of the Code, and the Committee shall treat this Section 7.2 as in effect only for those periods for which Section 422(d) of the Code is in effect.

SECTION 8
OPTION PRICE

The Option Price for each share of Stock subject to an Option shall be set by the Committee at the time the Option is granted, but such price shall not be set at less than the Fair Market Value of a share of Stock on the date the Option is granted. If the Option is an ISO and is granted to a Key Employee who is a Ten Percent Shareholder, the Option Price for each share of Stock subject to such ISO shall be no less than 110% of the Fair Market Value of a share of Stock on the date the ISO is granted. The Option Price shall be payable in full upon the exercise of any Option. Unless otherwise provided in an Option Agreement, full payment of the Option Price shall be made at the time of exercise and shall be made: (a) in cash or cash equivalents (including certified check or bank check or wire transfer of immediately available funds), (b) with the consent of the Committee, by tendering previously acquired shares of Stock, (c) with the consent of the Committee, by withholding shares of Stock otherwise issuable in connection with the exercise of the Option, (d) if the shares of Stock are publicly traded on an exchange, by means of a broker-assisted sale, (e) through any other method specified in an Option Agreement, or (f) any combination of any of the foregoing. Any payment made in Stock shall be treated as equal to the Fair Market Value of such Stock as of the date the properly endorsed certificate for such Stock is delivered to the Company. The notice of exercise, accompanied by such payment, shall be delivered to the Company at its principal business office or such other office as the Committee may from time to time direct, and shall be in such form, containing such further provisions consistent with the provisions of the Plan, as the Committee may from time to time prescribe.

SECTION 9
EXERCISE PERIOD

Each Option granted under this Plan shall be exercisable in whole or in part at such time or times as set forth in the related Option Agreement, but no Option Agreement shall make an Option exercisable on or after the earlier of

(a) the date that is the fifth anniversary of the date the Option is granted, if the Option is an ISO and the Key Employee is a Ten Percent Shareholder on the date the Option is granted, or

(b) the date that is the tenth anniversary of the date the Option is granted, if the Option is a NQO or if the Option is an ISO and is granted to a Key Employee who is not a Ten Percent Shareholder on the date the Option is granted.

An Option Agreement may provide for the exercise of an Option after the employment of a Key Employee or the service of a Director has terminated for any reason whatsoever, including death or disability; provided, however, to the extent an ISO remains or becomes exercisable on or after the last day of the three-consecutive-month period that immediately follows the last day of a Key Employee's continuous period of employment by Vaccinex, a Parent or a Subsidiary (other than as a result of death or total and permanent disability (within the meaning of Section 22(e)(3) of the Code)), the Option after such date no longer will qualify for any special income tax benefits under Section 422 of the Code. If a Key Employee terminates employment due to total and permanent disability, then to the extent an ISO remains or becomes exercisable on or after the last day of the one-year period that immediately follows the last day of the Key Employee's continuous period of employment by Vaccinex, a Parent or a Subsidiary, the Option after such date no longer will qualify for any special income tax benefits under Section 422 of the Code. For purposes of this Section 9 in the case of an ISO, an employment relationship will be treated as continuing during the period while a Key Employee is on military duty, sick leave or other bona fide leave of absence (as determined by the Committee) if the period of such leave does not exceed three months, or, if longer, so long as a statute or contract guarantees the Key Employee's right to re-employment with Vaccinex, a Parent or a Subsidiary.

SECTION 10
STOCK APPRECIATION RIGHTS

The Committee acting in its absolute discretion shall have the right to grant Stock Appreciation Rights to Key Employees or Directors under this Plan from time to time, and each Stock Appreciation Right grant shall be evidenced by a Stock Appreciation Right Certificate or, if such Stock Appreciation Right is granted as part of an Option, shall be evidenced by the Option Agreement for the related Option.

(a) Terms and Conditions.

(i) Stock Appreciation Right Certificate. If a Stock Appreciation Right is evidenced by a Stock Appreciation Right Certificate, such certificate shall set forth the number of shares of Stock on which the Key Employee's or Director's right to appreciation shall be based and the SAR Value of each share of Stock. Such SAR Value shall be no less than the Fair Market Value of a share of Stock on the date that the Stock Appreciation Right is granted. The Stock Appreciation Right Certificate shall set forth such other terms and conditions for the

exercise of the Stock Appreciation Right as the Committee deems appropriate under the circumstances, but no Stock Appreciation Right Certificate shall make a Stock Appreciation Right exercisable on or after the date which is the tenth anniversary of the date such Stock Appreciation Right is granted.

(ii) Option Agreement. If a Stock Appreciation Right is evidenced by an Option Agreement, the number of shares of Stock on which the Key Employee's or Director's right to appreciation shall be based shall be the same as the number of shares of Stock subject to the related Option and the SAR Value for each such share of Stock shall be no less than the Option Price under the related Option. Each such Option Agreement shall provide that the exercise of the Stock Appreciation Right with respect to any share of Stock shall cancel the Key Employee's or Director's right to exercise his or her Option with respect to such share and, conversely, that the exercise of the Option with respect to any share of Stock shall cancel the Key Employee's or Director's right to exercise his or her Stock Appreciation Right with respect to such share. A Stock Appreciation Right which is granted as part of an Option shall be exercisable only while the related Option is exercisable. The Option Agreement shall set forth such other terms and conditions for the exercise of the Stock Appreciation Right as the Committee deems appropriate under the circumstances.

(iii) Exercise. A Stock Appreciation Right shall be exercisable only when the Fair Market Value of a share of Stock on which the right to appreciation is based exceeds the SAR Value for such share, and the payment due on exercise shall be based on such excess with respect to the number of shares of Stock to which the exercise relates. A Key Employee or Director upon the exercise of his or her Stock Appreciation Right shall receive a payment from Vaccinex in cash or in Stock issued under this Plan, or in a combination of cash and Stock, and the number of shares of Stock issued shall be based on the Fair Market Value of a share of Stock on the date the Stock Appreciation Right is exercised.

SECTION 11
STOCK GRANTS

The Committee acting in its absolute discretion shall have the right to make Stock Grants to Key Employees and to Directors. Each Stock Grant shall be evidenced by a Stock Grant Certificate, and each Stock Grant Certificate shall set forth the conditions, if any, under which Stock will be issued under the Stock Grant and the conditions under which the Key Employee's or Director's interest in any Stock which has been issued will become non-forfeitable.

(a) Conditions.

(i) Conditions to Issuance of Stock. The Committee acting in its absolute discretion may make the issuance of Stock under a Stock Grant subject to the satisfaction of one, or more than one, condition which the Committee deems appropriate under the circumstances for Key Employees or Directors generally or for a Key Employee or a Director in particular, and the related Stock Grant Certificate shall set forth each such condition and the deadline for satisfying each such condition. Stock subject to a Stock Grant shall be issued in the name of a Key Employee or Director only after each such condition, if any, has been timely satisfied, and any Stock which is so issued shall be held by Vaccinex pending the satisfaction of the forfeiture conditions, if any, under Section 1 1(a)(ii) for the related Stock Grant.

(ii) Forfeiture Conditions. The Committee acting in its absolute discretion may make Stock issued in the name of a Key Employee or Director subject to one, or more than one, objective employment, performance or other forfeiture condition that the Committee acting in its absolute discretion deems appropriate under the circumstances for Key Employees or Directors generally or for a Key Employee or a Director in particular, and the related Stock Grant Certificate shall set forth each such forfeiture condition, if any, and the deadline, if any, for satisfying each such forfeiture condition. A Key Employee's or a Director's non-forfeitable interest in the shares of Stock underlying a Stock Grant shall depend on the extent to which he or she timely satisfies each such condition. Each share of Stock underlying a Stock Grant shall be unavailable under Section 3 after such grant is effective unless such share thereafter is forfeited as a result of a failure to timely satisfy a forfeiture condition, in which event such share of Stock shall again become available under Section 3 as of the date of such forfeiture.

(iii) Dividends and Voting Rights. If a cash dividend is paid on a share of Stock after such Stock has been issued under a Stock Grant but before the first date that a Key Employee's or a Director's interest in such Stock (1) is forfeited completely or (2) becomes completely non-forfeitable, Vaccinex shall pay such cash dividend directly to such Key Employee or Director. Unless the Stock Grant Certificate provides otherwise, if a Stock dividend is paid on such a share of Stock during such period, such Stock dividend shall be treated as part of the related Stock Grant, and a Key Employee's or a Director's interest in such Stock dividend shall be forfeited or shall become non-forfeitable at the same time as the Stock with respect to which the Stock dividend was paid is forfeited or becomes non-forfeitable. The disposition of each other form of dividend which is declared on such a share of Stock during such period shall be made in accordance with such rules as the Committee shall adopt with respect to each such dividend. A Key Employee or a Director also shall have the right to vote the Stock issued under his or her Stock Grant during such period.

(iv) Satisfaction of Forfeiture Conditions. A share of Stock shall cease to be subject to a Stock Grant at such time as a Key Employee's or a Director's interest in such Stock becomes non-forfeitable under this Plan, and the certificate representing such share shall be transferred to the Key Employee or Director as soon as practicable thereafter.

SECTION 12
NONTRANSFERABILITY

No Option, Stock Grant or Stock Appreciation Right shall (absent the Committee's consent) be transferable by a Key Employee or Director other than by will or by the laws of descent and distribution, and any Option or Stock Appreciation Right shall (absent the Committee's consent) be exercisable during the lifetime of a Key Employee or Director only by such Key Employee or Director. The person or persons to whom an Option or Stock Grant or Stock Appreciation Right is transferred by will or by the laws of descent and distribution (or with the Committee's consent) thereafter shall be treated as the Key Employee or Director under this Plan.

SECTION 13
SECURITIES REGISTRATION AND RESTRICTIONS

13.1. Investment Representation. As a condition to the receipt of shares of Stock under this Plan, a Key Employee or a Director shall, if so requested by Vaccinex, agree to hold such shares of Stock for investment and not with a view of resale or distribution to the public and, if so requested by Vaccinex, shall deliver to Vaccinex a written statement satisfactory to Vaccinex to that effect. Furthermore, if so requested by Vaccinex, a Key Employee or Director shall make a written representation to Vaccinex that he or she will not sell or offer for sale any of such Stock unless a registration statement shall be in effect with respect to such Stock under the 1933 Act and any applicable state securities law or he or she shall have furnished to Vaccinex an opinion in form and substance satisfactory to Vaccinex of legal counsel satisfactory to Vaccinex that such registration is not required. Certificates representing the Stock transferred upon the exercise of an Option or Stock Appreciation Right or upon the lapse of the forfeiture conditions, if any, on any Stock Grant may, at the discretion of Vaccinex, bear a legend to the effect that the Key Employee or Director agrees to hold such Stock for investment and not with a view to resale or distribution to the public and that such Stock has not been registered under the 1933 Act or any applicable state securities law and that such Stock cannot be sold or offered for sale in the absence of an effective registration statement as to such Stock under the 1933 Act and any applicable state securities law or an opinion in form and substance satisfactory to Vaccinex of legal counsel satisfactory to Vaccinex that such registration is not required.

13.2. Registration or Qualification of Shares. If the Committee, in its sole discretion, determines that registration or qualification of shares is necessary or desirable, Vaccinex shall, at its expense, take such action as may be required to effect such registration or qualification. However, the Committee is under no obligation to effect any such registration or qualification.

SECTION 14
LIFE OF PLAN

No Option or Stock Appreciation Right shall be granted or Stock Grant made under this Plan on or after the earlier of the tenth anniversary of the effective date of this Plan (as determined under Section 4), in which event this Plan shall continue in effect thereafter until all outstanding Options and Stock Appreciation Rights have been exercised in full or no longer are exercisable and all Stock issued under any Stock Grants under this Plan have been forfeited or have become non-forfeitable.

SECTION 15
ADJUSTMENT

15.1. Adjustment. The number, kind or class (or any combination thereof) of shares of Stock reserved under Section 3, the annual grant caps described in Section 6, the number, kind or class (or any combination thereof) of shares of Stock subject to Options or Stock Appreciation Rights granted under this Plan and the Option Price of such Options and the SAR Value of such Stock Appreciation Rights as well as the number, kind or class (or any combination thereof) of shares of Stock subject to Stock Grants under this Plan shall be adjusted by the Committee in an

equitable manner to reflect any change in the capitalization of Vaccinex resulting from a stock dividend or stock split. The Committee as part of any corporate transaction described in Section 424(a) of the Code, including, without limitation, stock dividends or stock splits, shall adjust (in any manner which the Committee in its discretion deems consistent with Section 424(a) of the Code) the number, kind or class (or any combination thereof) of shares of Stock reserved under Section 3 and the annual grant caps described in Section 6. Furthermore, the Committee as part of any such corporate transaction described in Section 424(a) of the Code shall have the right to adjust (in any manner which the Committee in its discretion deems consistent with Section 424(a) of the Code) the number, kind or class (or any combination thereof) of shares of Stock subject to any outstanding Stock Grants under this Plan and any related grant conditions and forfeiture conditions, and the number, kind or class (or any combination thereof) of shares subject to Option and Stock Appreciation Right grants previously made under this Plan and the related Option Price and SAR Value for each such Option and Stock Appreciation Right, and, further, shall have the right (in any manner which the Committee in its discretion deems consistent with Section 424(a) of the Code without regard to the annual grant caps described in Section 6) to make any Stock Grants and Option and Stock Appreciation Right grants to effect the assumption of, or the substitution for, stock grants and option and stock appreciation right grants previously made by any other corporation to the extent that such corporate transaction calls for such substitution or assumption of such stock grants and stock option and stock appreciation right grants.

15.2. Fractional Shares. If any adjustment under this Section 15 would create a fractional share of Stock or a right to acquire a fractional share of Stock, such fractional share shall be disregarded and the number of shares of Stock reserved under this Plan and the number subject to any Options or Stock Appreciation Right grants and Stock Grants shall be the next lower number of shares of Stock, rounding all fractions downward. An adjustment made under this Section 15 by the Committee shall be conclusive and binding on all affected persons and, further, shall not constitute an increase in "the number of shares of Stock reserved under Section 3" within the meaning of Section 17.

SECTION 16
CHANGE IN CONTROL

16.1. Effect of Change in Control on Awards. Subject to the requirements and limitations of Section 409A of the Code, if and to the extent applicable, upon a Change in Control of the Company the Committee may provide for any one or more of the following:

(a) Accelerated Vesting. The Committee may, in its discretion, provide in any Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate, or, in the event of a Change in Control, may take such actions as it deems appropriate to provide for the acceleration of the exercisability, vesting and/or settlement in connection with such Change in Control of each or any outstanding Option, Stock Appreciation Right or Stock Grant or portion thereof and shares acquired pursuant thereto upon such conditions, including termination of the Key Employee's or Director's employment or service prior to, upon, or following such Change in Control, to such extent as the Committee shall determine.

(b) Assumption, Continuation or Substitution. In the event of a Change in Control, the surviving, continuing, successor, or purchasing corporation or other business entity or parent thereof, as the case may be (the "Acquiror"), may, without the consent of any Key Employee or Director, either assume or continue the Company's rights and obligations under each or any Option, Stock Appreciation Right or Stock Grant or portion thereof outstanding immediately prior to the Change in Control or substitute for each or any such outstanding Option, Stock Appreciation Right or Stock Grant or portion thereof a substantially equivalent award with respect to the Acquiror's stock, as applicable. For purposes of this Section, if so determined by the Committee, in its discretion, an Option, Stock Appreciation Right or Stock Grant denominated in shares of Stock shall be deemed assumed if, following the Change in Control, the Option, Stock Appreciation Right or Stock Grant confers the right to receive, subject to the terms and conditions of the Plan and the applicable Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate, for each share of Stock subject to the Option, Stock Appreciation Right or Stock Grant immediately prior to the Change in Control, the consideration (whether stock, cash, other securities or property or a combination thereof) to which a holder of a share of Stock on the effective date of the Change in Control was entitled; provided, however, that if such consideration is not solely common stock of the Acquiror, the Committee may, with the consent of the Acquiror, provide for the consideration to be received upon the exercise or settlement of the Option, Stock Appreciation Right or Stock Grant, for each share of Stock subject to the Option, Stock Appreciation Right or Stock Grant, to consist solely of common stock of the Acquiror equal in Fair Market Value to the per share consideration received by holders of Stock pursuant to the Change in Control. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Committee may, in its sole discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Committee's good faith estimate of the present value of the probable future payment of such consideration. Any Option, Stock Appreciation Right or Stock Grant or portion thereof which is neither assumed or continued by the Acquiror in connection with the Change in Control nor exercised as of the time of consummation of the Change in Control shall terminate and cease to be outstanding effective as of the time of consummation of the Change in Control.

(c) Cash-Out of Awards. The Committee may, in its discretion and without the consent of any Key Employee or Director, determine that, upon the occurrence of a Change in Control, each or any Option or Stock Appreciation Right or a portion thereof outstanding immediately prior to the Change in Control and not previously exercised shall be canceled in exchange for a payment with respect to each vested share of Stock (and each unvested share of Stock, if so determined by the Committee) subject to such canceled Option or Stock Appreciation Right in: (A) cash, (B) stock of the Company or of a corporation or other business entity a party to the Change in Control, or (C) other property which, in any such case, shall be in an amount having a Fair Market Value equal to the Fair Market Value of the consideration to be paid per share of Stock in the Change in Control, reduced by the Option Price or SAR Value per share under such Option or Stock Appreciation Right. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Committee may, in its sole discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Committee's good faith estimate of the present value of the probable future payment of such consideration. In the event such determination is made by the Committee, the amount of such payment (reduced by applicable

withholding taxes, if any) shall be paid to Key Employee or Directors in respect of the vested portions of their canceled Options or Stock Appreciation Rights as soon as practicable following the date of the Change in Control, but no later than 90 days thereafter.

16.2. Federal Excise Tax Under Section 4999 of the Code. In the event that any acceleration of vesting pursuant to an Option, Stock Appreciation Right or Stock Grant and any other payment or benefit received or to be received by a Key Employee or Director would subject the Key Employee or Director to any excise tax pursuant to Section 4999 of the Code due to the characterization of such acceleration of vesting, payment or benefit as an "excess parachute payment" under Section 280G of the Code, the Key Employee or Director may elect, in his or her sole discretion, to reduce the amount of any acceleration of vesting called for under the Option, Stock Appreciation Right or Stock Grant in order to avoid such characterization.

SECTION 17
AMENDMENT OR TERMINATION

This Plan may be amended by the Board from time to time to the extent that the Board deems necessary or appropriate; provided, however, no amendment shall be made absent the approval of the stockholders of Vaccinex to the extent such approval is required under Section 422 of the Code (a) to increase the number of shares of Stock reserved under Section 3 which can be issued upon the exercise of ISOs or (b) to change the class of employees eligible for Options which are ISOs. The Board also may suspend granting Options or Stock Appreciation Rights or making Stock Grants under this Plan at any time and may terminate this Plan at any time; provided, however, the Board shall not have the right unilaterally to modify, amend or cancel any Option or Stock Appreciation Right granted or Stock Grant made before such suspension or termination in a manner that will adversely affect such Option, Stock Appreciation Right or Stock Grant unless (x) the Key Employee or Director consents in writing to such modification, amendment or cancellation or (y) there is a dissolution or liquidation of Vaccinex or a transaction described in Section 15.

SECTION 18
MISCELLANEOUS

18.1. Company Right to Redeem Options. Every vested Option shall be redeemable, in whole or in part, by Vaccinex at any time, in its discretion. The purchase price for any Option redeemed by Vaccinex shall be the Fair Market Value of the shares of Stock subject to the Option, less the Option Price for the shares of Stock. The purchase price, less any amount of federal and states taxes attributable to the redemption shall be paid to Key Employee or Director in cash or in Stock, or in any combination of the foregoing, as determined in the absolute discretion of the Committee.

18.2. Stockholder Rights. No Key Employee or Director shall have any rights as a stockholder of Vaccinex as a result of the grant of an Option or Stock Appreciation Right to him or to her or his or her exercise of such Option or Stock Appreciation Right pending the actual delivery of the Stock subject to such Option or Stock Appreciation Right to such Key Employee or Director. Subject to Section 11(a)(iii), a Key Employee's or a Director's rights as a stockholder in the shares of Stock underlying a Stock Grant which is effective shall be set forth in the related Stock Grant Certificate.

18.3. No Contract of Employment. The grant of an Option or Stock Appreciation Right or a Stock Grant to a Key Employee or Director under this Plan shall not constitute a contract of employment or a right to continue to serve on the Board and shall not confer on a Key Employee or Director any rights upon his or her termination of employment or services as a Director in addition to those rights, if any, expressly set forth in the Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate.

18.4. Stockholder Agreement. Vaccinex shall have the right to require a Key Employee or Director to enter into such employment, stockholder, buy-sell, right of first refusal or other agreement or agreements that Vaccinex deems appropriate under the circumstances as a condition to the grant or to the exercise of any Option or Stock Appreciation Right or as a condition to a Stock Grant or the issuance of Stock subject to a Stock Grant.

18.5. Withholding. Each Option, Stock Appreciation Right and Stock Grant shall be made subject to the condition that the Key Employee consents to whatever action the Committee directs to satisfy the federal and state tax withholding requirements, if any, applicable to the exercise of such Option or Stock Appreciation Right or the satisfaction of any forfeiture conditions with respect to Stock subject to such Stock Grant. The Committee also shall have the right to provide in an Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate that a Key Employee may elect to satisfy federal and state tax withholding requirements through a reduction in the cash or the number of shares of Stock (up to the Key Employee's minimum required tax withholding rate or such other rate that will not trigger a negative accounting impact) actually transferred to him or to her under this Plan.

18.6. Application of Proceeds. The proceeds of the sale of shares of Stock by Vaccinex under this Plan will constitute general funds of Vaccinex and may be used for any purpose.

18.7. Liability of Company. Vaccinex, any Parent or any Subsidiary, shall not be liable to a Key Employee or Director as to:

(a) Non-Issuance of Shares. The non-issuance or sale of shares of Stock as to which Vaccinex has been unable to obtain from any regulatory body having jurisdiction the authority deemed by counsel of Vaccinex to be necessary to the lawful issuance and sale of any shares hereunder.

(b) Tax Consequences. Any tax consequences expected but not realized by any Key Person or Director due to the exercise of any Option or Stock Appreciation Right or the satisfaction of any forfeiture conditions with respect to Stock subject to a Stock Grant.

18.8. Construction. This Plan shall be construed under the laws of the State of Delaware. The headings in this Plan are for convenience of reference purposes only. All references to sections are to sections of this Plan unless otherwise indicated.

18.9. Rule 16b-3. The Committee shall have the right to amend any Option, Stock Appreciation Right or Stock Grant to withhold or otherwise restrict the transfer of any Stock or

cash under this Plan to a Key Employee or Director as the Committee deems appropriate in order to satisfy any condition or requirement under Rule 16b-3 to the extent Rule 16 of the 1934 Act might be applicable to such grant or transfer.

18.10. Loans. If approved by the Committee, Vaccinex may lend money to, or guarantee loans made by a third party to, any Key Employee or Director to finance all or a part of the exercise of any Option granted under this Plan or the purchase of any Stock subject to a Stock Grant under this Plan, and the exercise of an Option or the purchase of any such Stock with the proceeds of any such loan shall be treated as an exercise or purchase for cash under this Plan.

18.11. Provision for Income Taxes. The Committee acting in its absolute discretion shall have the power to authorize and direct Vaccinex to pay a cash bonus (or to provide in the terms of an Option Agreement, Stock Appreciation Right Certificate or Stock Grant Certificate for Vaccinex to make such payment) to a Key Employee or Director to pay all, or any portion of, his or her federal, state and local income tax liability which the Committee deems attributable to his or her exercise of an Option or Stock Appreciation Right or his or her interest in the shares of Stock issued under his or her Stock Grant becoming non-forfeitable and, further, to pay any such tax liability attributable to such cash bonus.

IN WITNESS WHEREOF, Vaccinex has caused its duly authorized officer to execute this Plan this 14 day of Dec. 2011, to evidence its adoption of this Plan.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President

Exhibit 10.5

VACCINEX, INC.
2011 EMPLOYEE EQUITY PLAN
INCENTIVE STOCK OPTION AGREEMENT

GRANT

This Option Agreement evidences the grant by Vaccinex, Inc. ("Vaccinex"), in accordance with the Vaccinex, Inc. 2011 Employee Equity Plan (the "Plan"), of an Incentive Stock Option ("ISO") to ("Key Employee") to purchase from Vaccinex shares of $0.0001 par value common stock of Vaccinex (the "Stock") at an Option Price per share equal to $. This ISO is granted effective as of (the "Grant Date"). Vaccinex intends that this ISO constitute an incentive stock option under Section 422 of the Code.

VACCINEX, INC.

By: _____

TERMS AND CONDITIONS

Section 1 Plan. This ISO is subject to all of the terms and conditions set forth in the Plan and this Option Agreement, and all capitalized terms not otherwise defined in this Option Agreement shall have the respective meaning of such terms as defined in the Plan. If a determination is made that any term or condition set forth in this Option Agreement is inconsistent with the Plan, the Plan shall control. A copy of the Plan has been made available to Key Employee.

Section 2 Exercise Rights.

(a) General Rule. Key Employee automatically shall have the right under this Option Agreement to exercise this ISO with respect to:

(1) shares of Stock underlying the grant of this ISO if Key Employee remains a full time employee from the Grant Date through ,

(2) an additional of the shares of Stock underlying the grant of this ISO if Key Employee remains a full time employee from the Grant Date through ,

(3) an additional of the shares of Stock underlying the grant of this ISO if Key Employee remains a full time employee from the Grant Date through ,

(4) an additional of the shares of Stock underlying the grant of this ISO if Key Employee remains a full time employee from the Grant Date through , and

(5) the balance of shares of Stock underlying the grant of this ISO if Key Employee remains a full time employee from the Grant Date through .

(b) Special Rules.

(1) Termination. If Key Employee's employment with Vaccinex terminates for any reason other than death, "Disability" (as defined in Section 2(c)) or "Cause" (as defined in Section 2(c)), Key Employee's right under Section 2(a) to exercise this ISO shall expire 3 months after the date employment so terminates or on the date described in Section 3, whichever comes first.

(2) Termination for Cause. If Vaccinex terminates Key Employee's employment as a result of "Cause" (as defined in Section 2(c)), Key Employee shall forfeit Key Employee's right under Section 2(a) to exercise this ISO (whether or not vested) at the time Key Employee's employment terminates.

(3) Death or Disability. If Key Employee's employment with Vaccinex terminates by reason of Key Employee's death or "Disability" (as defined in Section 2(c)), Key Employee or Key Employee's estate (whichever is applicable) shall have the right to exercise this ISO until the earlier of (A) the first anniversary of the date Key Employee's employment so terminates or (B) the date described in Section 3, after which time this ISO shall expire immediately and automatically.

(c) Definitions.

(1) Cause. For purposes of this Option Agreement, "Cause" shall exist if Key Employee (A) commits any act of malfeasance or wrongdoing affecting Vaccinex or any Subsidiary, monetarily or otherwise, (B) breaches any employment agreement, covenant not to compete, or nonsolicitation and nondisclosure agreement, or (C) engages in conduct amounting to fraud, dishonesty, willful misconduct, negligence, repeated instances of insubordination, or conviction of a felony or a crime involving moral turpitude, all as determined in the exercise of good faith by the Committee.

(2) Disability. For purposes of this Option Agreement, the term "Disability" means "permanent and total disability" as defined in Section 22(e)(3) of the Code.

(d) Employment Status. A transfer between Vaccinex and a Subsidiary or between Subsidiaries shall not be treated as a termination of employment with Vaccinex under the Plan or this Option Agreement.

Section 3 Life of ISO. This ISO shall expire and shall not be exercisable for any reason on or after the tenth anniversary of the Grant Date.

Section 4 Method of Exercise of ISO. Key Employee may exercise this ISO in whole or in part (to the extent this ISO is otherwise exercisable under Section 2) on any normal business day of Vaccinex by (a) delivering this Option Agreement to Vaccinex, together with written notice of the exercise of the ISO, and (b) simultaneously paying to Vaccinex the Option Price. The payment of such Option Price shall be made either in cash, by check acceptable to Vaccinex, by delivery to Vaccinex of certificates (properly endorsed) for shares of Vaccinex Stock registered in Key Employee's name, by withholding shares of Vaccinex Stock otherwise issuable in connection with the exercise of this ISO, or in any combination of such cash, check, and Stock that results in payment in full of the Option Price. Stock that is so tendered as payment (in whole or in part) of the Option Price shall be valued at its Fair Market Value on the date the ISO is exercised.

Section 5 Delivery. Vaccinex shall deliver a properly issued certificate for any Stock purchased pursuant to the exercise of this ISO as soon as practicable after such exercise, and such delivery shall discharge Vaccinex of all of its duties and responsibilities with respect to this ISO. Such certificate shall bear such legends as the Committee deems necessary or advisable.

Section 6 Nontransferable. No rights granted under this ISO shall be transferable by Key Employee other than by will or by the laws of descent and distribution, and the rights granted under this ISO shall be exercisable during Key Employee's lifetime only by Key Employee. The person or persons, if any, to whom this ISO is transferred by will or by the laws of descent and distribution shall be treated after Key Employee's death the same as Key Employee under this Option Agreement.

Section 7 No Right to Continue Service. Neither the Plan, this ISO, nor any related material shall give Key Employee the right to continue in employment by Vaccinex or any Subsidiary or shall adversely affect the right of Vaccinex or any Subsidiary to terminate Key Employee's employment with or without cause at any time.

Section 8 Stockholder Status. Key Employee shall have no rights as a stockholder with respect to any shares of Stock under this ISO until such shares have been duly issued and delivered to Key Employee and, except as expressly set forth in the Plan, no adjustment shall be made for dividends of any kind or description whatsoever or for distributions of other rights of any kind or description whatsoever respecting such Stock.

Section 9 Securities Registration. As a condition to the delivery of the certificate for any shares of Stock purchased pursuant to the exercise of this ISO, Key Employee shall, if so requested by Vaccinex, hold such shares of Stock for investment and not with a view of resale or distribution to the public and, if so requested by Vaccinex, shall deliver to Vaccinex a written statement satisfactory to Vaccinex to that effect.

Section 10 Other Laws. If any change in circumstances after the grant of this ISO would create a substantial risk for Vaccinex that the issuance or transfer of any Stock under this ISO to Key Employee at the time Key Employee tenders any payment to exercise this ISO would violate any applicable law or regulation, Vaccinex at that time shall (a) take such action as the Committee deems fair and reasonable and permissible under such law or regulation either (1) to continue to maintain the status of this ISO as outstanding until Key Employee can exercise this ISO without any substantial risk of such a violation or (2) to fully and fairly compensate Key Employee for the cancellation of this ISO and thereafter to cancel this ISO and (b) refund any payment made by Key Employee to exercise this ISO.

Section 11 Other Agreement. If so requested by the Committee, Key Employee shall (as a condition to the exercise of this ISO) enter into such additional shareholder, buy-sell or other agreement or agreements prepared by Vaccinex as Vaccinex deems appropriate, which may restrict the transfer of shares of Stock acquired pursuant to this ISO and provide for the repurchase of such Stock by Vaccinex under certain circumstances. The certificate(s) evidencing the Stock may include one or more legends that reference or describe the conditions upon exercise referenced in this Section 11.

Section 12 Notice of Disqualifying Disposition. Key Employee shall notify Vaccinex in the event that prior to the later of two years after the Grant Date of this ISO or one year after the transfer of shares of Stock to Key Employee pursuant to the exercise of this ISO, Key Employee disposes of such shares. Such notice shall state the date of disposition, the nature of the disposition and the price, if any, received for the shares upon disposition.

Section 13 Governing Law. The Plan and this ISO shall be governed by the laws of the State of Delaware.

Section 14 Binding Effect. This ISO shall be binding upon Vaccinex and Key Employee and their respective heirs, executors, administrators and successors.

Section 15 Headings and Sections. The headings contained in this Option Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this ISO. Any references to sections (Section) in this Option Agreement shall be to sections (Section) of this Option Agreement unless otherwise expressly stated as part of such reference.

Section 16 Effect of Change in Control. In the event of a Change in Control, except to the extent that the Committee determines to cash out this ISO in accordance with Section 16.1(c) of the Plan, the surviving, continuing, successor, or purchasing entity or parent thereof, as the case may be (the “Acquiror”), may, without the consent of the Key Employee, assume or continue in full force and effect the Company’s rights and obligations under all or any portion of this ISO or substitute for all or any portion of this ISO a substantially equivalent option for the Acquiror’s stock. For purposes of this Section, this ISO or any portion thereof shall be deemed assumed if, following the Change in Control, this ISO confers the right to receive, subject to the terms and conditions of the Plan and this Option Agreement, for each share of Vaccinex Stock

subject to such portion of this ISO immediately prior to the Change in Control, the consideration (whether stock, cash, other securities or property or a combination thereof) to which a holder of a share of Vaccinex Stock on the effective date of the Change in Control was entitled; provided, however, that if such consideration is not solely common stock of the Acquiror, the Committee may, with the consent of the Acquiror, provide for the consideration to be received upon the exercise of this ISO, for each share of Vaccinex Stock subject to this ISO, to consist solely of common stock of the Acquiror equal in Fair Market Value to the per share consideration received by holders of Vaccinex Stock pursuant to the Change in Control. This ISO shall terminate and cease to be outstanding effective as of the time of consummation of the Change in Control to the extent that the Option is neither assumed or continued by the Acquiror in connection with the Change in Control nor exercised as of the date of the Change in Control.

Section 17 Amendment, Suspension and Termination. To the extent permitted by the Plan, this Option Agreement may be wholly or partially amended or otherwise modified, suspended or terminated at any time or from time to time by the Committee or the Board; provided, however, that, except as may otherwise be provided by the Plan, no amendment, modification, suspension or termination of this Option Agreement shall adversely affect this ISO in any material way without the prior written consent of the Key Employee.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

EXCLUSIVE LICENSE AGREEMENT

This Exclusive License Agreement (the "Agreement") is made effective as of the 29 day of December, 1998 (the "Effective Date"), by and between the UNIVERSITY OF ROCHESTER ("Rochester"), a New York education corporation, and VACCINEX, L.P., a for profit limited partnership organized under the laws of Georgia ("Vaccinex").

WITNESSETH:

WHEREAS, Rochester is the owner of the Subject Technology, as defined below; and

WHEREAS, Rochester is willing to grant a royalty bearing, worldwide, exclusive license to the Subject Technology to Vaccinex on the terms set forth herein; and

WHEREAS, Vaccinex desires to obtain said exclusive license to the Subject Technology.

NOW, THEREFORE, for and in consideration of the premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto expressly agree as follows:

1. CERTAIN DEFINITIONS

1.1 Affiliates. The term "Affiliates" shall mean any legal entity controlled by, controlling or under common control with Vaccinex. For this purpose "control" means direct or indirect beneficial ownership of at least fifty percent (50%) of the outstanding voting equity or other ownership interests or assets of the other entity.

1.2 Appreciation Rights Agreement. The term "Appreciation Rights Agreement" shall mean that certain Appreciation Rights Agreement between the parties executed concurrently with this Agreement.

1.3 Field. The term "Field" shall mean all fields of use desired by Vaccinex.

1.4 Lease Agreement. The term "Lease Agreement" shall mean that certain Lease Agreement between the parties executed concurrently with this Agreement.

1.5 Licensed Method. The term "Licensed Method" shall mean all methods that incorporate or utilize the Subject Technology.

1.6 Licensed Products. The term "Licensed Products" shall mean all products that incorporate, utilize or are made with the use of the Subject Technology.

1.7 Net Sales. The term "Net Sales" shall mean the gross amount of monies or cash equivalent of other consideration which is paid by unrelated third parties to Vaccinex for the Licensed Method or the Licensed Products, as the case may be, by sale or other mode of transfer,

less all trade, quantity and cash discounts actually allowed, credits, and allowances actually granted on account of rejections, returns or billing errors, and all duties, transportation, handling, insurance, taxes and other governmental charges actually paid.

1.8 Parties. The term "Parties" or individually, a "Party," shall mean the parties to this Agreement, namely, Rochester and Vaccinex.

1.9 Patent Rights. The term "Patent Rights" shall mean the patent application listed in Exhibit A hereto (the "Zauderer Patent Application), together with all other applications for patent or like protection on the inventions disclosed in Zauderer Patent Application that may be made resulting from work performed by Maurice Zauderer or in the facilities under his direction and all patents or like protection that may in the future be granted on said inventions whether in the United States of America or any other country and all substitutions for and provisionals, divisions, continuations, continuations in part, renewals, reissues, reexaminations, extensions and the like on said applications and patents. In the event that this Agreement is used for licenses under the Research Agreement or the Lease Agreement, the term "Patent Rights" shall mean the patents and other intellectual property rights identified by the parties as the licensed technology or the licensed products under any such license together with all other applications for patent or like protection on the inventions disclosed in such patents or patent applications that may be made and all patents or like protection that may in the future be granted on said inventions whether in the United States of America or any other country and all substitutions for and provisionals, divisions, continuations, continuations in part, renewals, reissues, reexaminations, extensions and the like on said applications and patents.

1.10 Research Agreement. The term "Research Agreement" shall mean that certain Cooperative Research & Development Agreement between the parties executed concurrently with this Agreement.

1.11 [***]. The term "[***]" shall mean [***].

1.12 Subject Technology. The term "Subject Technology" shall mean the Patent Rights and all technology, methods, compounds, compositions, cell lines, biological materials, know-how, documents, materials, tests, laboratory notebooks, computer data, all improvements, thereto, and all confidential information related to the subject matter disclosed or claimed in the patents and patent applications listed in Exhibit A, which were developed prior to, or are developed during the term of this Agreement by Rochester.

1.13 [***]. The term "[***]" shall mean [***].

2. GRANT OF LICENSE

2.1 Exclusive License. Subject to Section 2.2, Rochester hereby grants to Vaccinex and its Affiliates an exclusive, worldwide, right and license, with the right to sublicense, of the Subject Technology to make, have made, use, market, import, export, sell and offer for sale Licensed Products and otherwise use the Subject Technology for research and any other purpose in the Field. To the extent that an Affiliate of Vaccinex uses the foregoing license of the Subject Technology, the Affiliate shall agree to be bound by the terms and conditions of this Agreement, and all references to Vaccinex in this Agreement shall be deemed to include such Affiliate.

2.2 Reserved Rights. The grant in Section 2.1 shall be further subject to, restricted by and non-exclusive with respect to:

(i) the use of the Subject Technology by Rochester for non-commercial research, patient care, teaching and other educationally related purposes;

(ii) the use of the Subject Technology by the inventor thereof for non-commercial research purposes at academic or research institutions; and

(iii) any non-exclusive license of the Subject Technology that Rochester is required by law or regulation to grant to the United States of America or to a foreign state pursuant to an existing or future treaty with the United States of America.

2.3 Registration of License. Vaccinex at its expense, may register the license granted under this Agreement in any country of the world where the use, sale or manufacture of a Licensed Method or a Licensed Product in such country would be covered by the Patent Rights. Upon request by Vaccinex, Rochester agrees promptly to execute any “short form” licenses submitted to it by Vaccinex in order to effect the foregoing registration in such country.

3. PAYMENTS AND REPORTS

3.1 Initial Fee. Vaccinex shall pay Rochester an initial license fee of [***] Dollars ($[***]), payable in full upon execution of this Agreement.

3.2 Royalties.

3.2.1 Licensed Method Royalty Under Appendix A Patents. Vaccinex shall pay Rochester a running royalty of [***]percent ([***]%) of Net Sales of the Licensed Method made in countries in which a Licensed Method falls within the valid or pending claims of any patent application listed in Appendix A or of any patent issuing on the applications listed in Appendix A. Such running royalties shall be payable as provided in Section 3.7.

3.2.2 Licensed Product Royalty Under Appendix A Patents. Vaccinex shall pay Rochester a running royalty of [***] percent ([***]%) of Net Sales of Licensed Products made in countries in which a Licensed Products falls within the valid or pending claims of any patent application listed in Appendix A or of any patent issuing on the applications listed in Appendix A. Such running royalties shall be payable as provided in Section 3.7.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

3.2.3 Licensed Products Arising from the Lease or Research Agreements. In the event that this Agreement is used as the applicable License Agreement for technologies or rights licensed under the Research Agreement or under the Lease Agreement, the following royalty provisions will apply: Vaccinex shall pay Rochester a running royalty of (i) [***] percent ([***]%) of Net Sales of Licensed Products that are vaccines or therapeutic products made in countries in which a Licensed Product sold falls within the valid claims of any patent licensed hereunder, (ii) [***] percent ([***]%) of Net Sales of Licensed Products that are diagnostic products made in countries in which a Licensed Product sold falls within the valid claims of any patent licensed hereunder, and (iii) [***] percent ([***]%) of Net Sales of Licensed Products that are methods of production of a vaccine, therapeutic product or a diagnostic product made in countries in which a Licensed Product sold falls within the valid claims of any patent licensed hereunder. The running royalties owed under this Section shall be payable as provided in Section 3.7.

3.2.4 Pass Through Royalty on Licensed Products Not Arising from the Lease or Research Agreements. With respect to Licensed Products developed using the Licensed Method that are not subject to the running royalties under Section 3.2.2 or Section 3.2.3 above, Vaccinex shall pay Rochester for each calendar year in which Net Sales of such Licensed Products are made the lesser of (i) [***] Dollars ($[***]) or (ii) a running royalty of [***] percent ([***]%) of Net Sales of such Licensed Products for such year that are made in countries in which a Licensed Product falls within the valid claims of any patent licensed hereunder. The running royalties owed under this Section shall be payable as provided in Section 3.7.

3.2.5 Application of Royalties. The royalties set forth in each of Section 3.2.1, Section 3.2.2, each of the three categories set forth in Section 3.2.3, and Section 3.2.4 shall each be in lieu of, and not in addition to, or aggregated with each other. Accordingly, if a royalty is paid under one Section, no royalty shall be owed under another Section for the same sale of such Licensed Product or Licensed Method.

3.2.6 Credits. Vaccinex may credit solely against running royalties (paid pursuant to this Section 3.2 or Sections 3.4 or 3.5), all reasonable costs incurred by Vaccinex after the date hereof (excluding any reimbursements to Rochester pursuant to Section 6.1 and the Initial Filing Costs, as defined therein) in connection with any litigation, interference, opposition, or other action pertaining to the Patent Rights or whether Vaccinex's practice of the Patent Rights infringes a third party patent, such credits not to exceed [***] percent ([***]%) of the running royalties otherwise due Rochester hereunder. Should any such litigation, interference, opposition or other action result in a settlement which provides income to Vaccinex, such income shall be first paid to Rochester up to an amount equal to any reduction in royalties made pursuant to this Section 3.2.5.

3.3 Milestone Payments. Vaccinex shall also make payments to Rochester in the following amounts upon the occurrence of the following milestones: (a) [***] Dollars ($[***]) upon the submission of the first Investigational New Drug Application ("INDA") for a Licensed Product to the FDA; (b) [***] Dollars ($[***]) upon the approval of the first New Drug Application ("NDA") for a Licensed Product from the FDA and (c) [***] Dollars ($[***]) upon the filing of the first 510(k) (or similar filing) for a Licensed Product that is a diagnostic. The foregoing milestone payments shall only be owed for the first Licensed Product reaching such milestone. Any subsequent INDA, NDA or 510(k) for other Licensed Products shall not result in any additional required payment to Rochester.

3.4 [***]

3.5 [***]

3.6 Third Party Royalties. If Vaccinex determines after consultation with Rochester that it is required to pay royalties or other fees to any third party because the manufacture, use, offer for sale, importation, or sale of a Licensed Method or a Licensed Product would otherwise be likely to infringe any patent or other intellectual property rights of such third party in a given country ("Third Party Royalties"), Vaccinex may deduct from running royalties thereafter due to Rochester (pursuant to Sections 3.2, 3.4 or 3.5 of this Agreement) with respect to the Net Sales of such Licensed Method or Licensed Product in such country up to [***] percent ([***]%) of the Third Party Royalties. In no event shall the royalties due to Rochester on such Net Sales in such country on account of any reduction pursuant to this Section 3.6 be thereby reduced to less than [***] percent ([***]%) on such Net Sales of a Licensed Method, [***] percent ([***]%) on such Net Sales of a Licensed Product that is a diagnostic product or [***] percent ([***]%) on such Net Sales of a Licensed Product that is a vaccine or therapeutic product in such country. If the sum of the royalties paid hereunder and Third Party Royalties for a given Licensed Product or a Licensed Method in a given country exceeds, at any time, more than [***] percent ([***]%) on a vaccine or other therapeutic product, [***] percent ([***]%) on a diagnostic product or [***] percent ([***]%) on a method of production of the Net Sales for such a Licensed Product or Licensed Method, then upon Vaccinex's request, Rochester and Vaccinex agree to negotiate in good faith in an effort to agree on a reduction in the royalties payable hereunder to Rochester for such Licensed Product or Licensed Method in such country. In the event the parties are unable to agree to such reduction after a reasonable period of time, not to exceed [***], either party may request that the issue be arbitrated in accordance with Section 12.6 of this Agreement.

3.7 Quarterly Payments. Upon the commencement of Net Sales of the Licensed Method or any Licensed Product, payment of the royalties specified in Section 3.2 shall be made by Vaccinex to Rochester within [***] after March 31, June 30, September 30 and December 31 of each year during the term of this Agreement covering the quantity of Licensed Products sold by Vaccinex during the preceding calendar quarter. Payment of the royalties specified in Sections 3.4 and 3.5 shall be made by Vaccinex to Rochester within [***] after receipt of payment from the sublicensee. After termination or expiration of this Agreement, a final payment shall be made by Vaccinex covering the whole or partial calendar quarter. Each

quarterly payment shall be accompanied by a written statement of Net Sales of Licensed Products by Vaccinex during such calendar quarter. Such written statements shall be duly signed by an authorized signatory of Vaccinex on behalf of Vaccinex and shall show the Net Sales of Licensed Products by Vaccinex during such calendar quarter and the amount of royalties payable under this Agreement based thereon.

3.8 Payments in Dollars. All payments due hereunder are expressed in and shall be paid by check payable in United States of America currency, without deduction of exchange, collection or other charges, to Rochester, or to the account of Rochester at such other bank as Rochester may from time to time designate by notice to Vaccinex. All currency conversion rates will be calculated at the reported conversion rate in The Wall Street Journal on the first day of the month in which the payment is due.

3.9 Interest on Late Payments. In the event that any payment due hereunder is not made when due, the payment shall accrue interest beginning on the [***] following the due date thereof, calculated at the annual rate of [***] percent ([***]%), the interest being compounded on the last day of each calendar quarter, provided, however, that in no event shall said annual interest rate exceed the maximum legal interest rate. Each such royalty payment when made shall be accompanied by all interest so accrued. Said interest and the payment and acceptance thereof shall not negate or waive the right of Rochester to seek any other remedy, legal or equitable, to which it may be entitled because of the delinquency of any payment.

3.10 Invalid or Pending Claims. With respect to any running royalty payment owed by Vaccinex hereunder for a claim under a pending patent application or under any patent or patent claim that is held invalid in a decision by any court of competent jurisdiction, all such payments shall be paid to an interest-bearing escrow account established by the parties until a final decision is made by the applicable government patent office or a final decision is rendered in any appeal made to a court of competent jurisdiction and last resort. In the event that a patent issues or a patent or patent claim is held valid, then the monies and interest in such escrow account with respect to such patent or patent claim will be paid to Rochester. In the event that a patent does not issue or a patent or patent claim is held invalid, than the monies and interest in such escrow account with respect to such patent or patent claim shall be paid to Vaccinex.

4. RECORDS AND INSPECTION

Vaccinex shall maintain or cause to be maintained a true and correct set of records pertaining to the Net Sales of Licensed Products by Vaccinex under this Agreement. During the term of this Agreement and for a period of one (1) year thereafter, Vaccinex agrees to permit, upon reasonable advance notice, an accountant selected by Rochester and reasonably acceptable to Vaccinex to have access during ordinary business hours to such records as are maintained by Vaccinex as may be necessary, in the opinion of such accountant, to determine the correctness of any report and/or payment made under this Agreement. In the event that the audit reveals an

underpayment of royalty by more than [***] percent ([***]%), the cost of the audit shall be paid by Vaccinex. If the underpayment is less than [***] percent ([***]%) but more than [***] percent ([***]%), Vaccinex and Rochester shall each pay fifty percent (50%) of the cost of the independent audit. If the underpayment is less than [***] percent ([***]%), Rochester shall bear the cost of the independent audit. Such accountant shall maintain in confidence, and shall not disclose to Rochester, any information concerning Vaccinex or its operations or properties other than information directly relating to the correctness of such reports and payments and such accountant shall be required to sign a confidentiality agreement to effect the foregoing in such form as Vaccinex shall reasonably require.

5. SUBLICENSES

All sublicenses granted by Vaccinex of its rights hereunder shall be subject to the terms of this License Agreement. No sublicense royalty fees shall be owed to Rochester hereunder for milestone payments, development funds, equity investments in Vaccinex, payments for past research expenditures, or similar payments made by third parties to Vaccinex. Vaccinex shall be responsible for its sublicensees and shall not grant any rights which are inconsistent with the rights granted to and obligations of Vaccinex hereunder. Any act or omission of a sublicensee which would be a breach of this License Agreement if performed by Vaccinex shall be deemed to be a breach by Vaccinex of this License Agreement. Vaccinex shall give Rochester prompt notification of the identity and address of each sublicensee with whom it concludes a sublicense agreement.

6. PATENTS AND INFRINGEMENT

6.1 Patent Costs. Within thirty days of the Effective Date, Vaccinex agrees to pay Rochester Sixteen Thousand Seven Hundred Twenty-Four Dollars ($16,724) (the “Initial Filing Costs”) in reimbursement of the legal fees incurred in the filing and prosecution of the Patent Rights to the Effective Date. After the Effective Date, Vaccinex agrees, with respect to the Subject Technology for the term of this Agreement, to pay all costs incurred by Rochester, incident to the United States and foreign applications, patents and like protection, including all costs incurred for filing, prosecution, issuance and maintenance fees as well as any costs incurred in filing continuations, continuations-in-part, divisionals or related applications and any reexamination or reissue proceedings; provided Rochester has complied with the other terms and conditions of this Agreement, including, without limitation, Sections 6.3 and 6.4 hereof. Other than the Initial Filing Costs, Vaccinex shall have no obligation for any costs related to the protection of the Subject Technology that were incurred prior to the Effective Date.

6.2 Maintenance of Patents. Rochester shall use all reasonable efforts to prosecute any patent applications within the Patent Rights, to obtain patents thereon and to maintain such patents using patent counsel of its choice as approved by Vaccinex. Vaccinex shall have the right to terminate its payment obligations pursuant to Section 6.1 with respect to any patent

application or patent included in the Patent Rights in any country or countries upon at least [***] prior written notice to Rochester. Rochester may pay for such patents and patent applications and continue said prosecution or maintenance of such patent applications at its own expense, and the license rights as to such Subject Technology covered by such patents and patent applications shall terminate with respect to such country or countries as of the effective date of Vaccinex's notice.

6.3 Patent Prosecutions. Rochester agrees to keep Vaccinex fully informed of any and all patent prosecution and other actions with respect to the Subject Technology including sending to Vaccinex copies of all correspondence with patent offices and local associates, submitting to Vaccinex copies of all draft responses to Office Actions and other substantive filings in sufficient time prior to filing to provide Vaccinex with adequate time to review and comment on such matters; provided, however, that Vaccinex shall be responsible for any of its expenses including attorney's fees that Vaccinex incurs in reviewing and commenting on the information received from Rochester. Rochester shall consult with Vaccinex regarding any material actions concerning the Patent Rights and shall use all reasonable efforts to amend any patent applications to add claims reasonably requested by Vaccinex. If Rochester decides to abandon or allow to lapse any patent or patent application within the Patent Rights in any country, Rochester will inform Vaccinex in a timely manner and Vaccinex shall have the right to prosecute or maintain any such patent or patent application at its expense. Rochester will use patent counsel for all patent matters that is acceptable to Vaccinex.

6.4 Cooperation. Rochester agrees to reasonably cooperate with Vaccinex to whatever extent is reasonably necessary to procure and defend the patent protection of any rights in the Subject Technology, including presenting or amending any claims desired by Vaccinex, filing reissue or reexamination applications, patent extensions, or other documents desired by Vaccinex, and agreeing to execute any and all documents to provide Vaccinex the full benefit of the licenses granted herein.

6.5 Infringements. Each Party shall promptly inform the other of any suspected infringement of any claims in the Patent Rights or misuse, misappropriation, theft or breach of confidence of other proprietary rights in the Subject Technology by a third party, and with respect to such activities as are suspected, Vaccinex shall have the right, but not the obligation, to institute an action for infringement, misuse, misappropriation, theft or breach of confidence of the proprietary rights against such third party. If Vaccinex fails to bring such an action or proceeding within a period of [***] after receiving notice or otherwise having knowledge of such infringement, then Rochester shall have the right, but not the obligation, to prosecute at its own expense any such claim. Should either Rochester or Vaccinex commence suit under the provisions of this Section 6.5 and thereafter elect to abandon the same, it shall give at least [***] written notice to the other Party who may, if it so desires, continue prosecution of such action or proceeding. All recoveries, whether by judgment, award, decree or settlement, from infringement or misuse of Subject Technology shall be apportioned as follows: the Party

bringing the action or proceeding shall first recover an amount equal to [***] times the costs and expenses incurred by such Party directly related to the prosecution of such action or proceeding and the remainder shall be distributed pursuant to the terms of this agreement.

6.6 Settlements. Neither Rochester nor Vaccinex shall settle any action covered by Section 6.5 without first obtaining the consent of the other Party, which consent will not be unreasonably withheld.

6.7 Certain Notices. Rochester shall use its best efforts to notify Vaccinex of (i) the issuance of each patent included within the Patent Rights, giving the date of issue and patent number for each such patent, and (ii) each notice pertaining to any patent included within the Patent Rights which Rochester receives as patent owner pursuant to the Drug Price Competition and Patent Term Restoration Act of 1984 (hereinafter called the "Act"), including but not necessarily limited to notices pursuant to §§ 101 and 103 of the Act from persons who have filed an abbreviated NDA ("ANDA") or a "paper" NDA. Such notices shall be given promptly, but in any event within [***] of each such patent's date of issue or receipt of each such notice pursuant to the Act, whichever is applicable.

6.8 Authorizations Relating to Patent Term Extension. Rochester hereby authorizes Vaccinex (i) to include in any NDA for a Licensed Product, as Vaccinex may deem appropriate under the Act, a list of patents included within the Patent Rights that relate to such Licensed Product and such other information as Vaccinex in its reasonable discretion believes is appropriate to be filed pursuant to the Act; (ii) notwithstanding the provisions of Section 6.5, to commence suit for any infringement of Patent Rights under § 271(e) (2) of Title 35 of the United States Code occasioned by the submission by a third party of an ANDA or a paper NDA for a Licensed Product pursuant to §§ 101 or 103 of the Act; and (iii) in consultation with Rochester, to exercise any rights that may be exercisable by Rochester as patent owner under the Act to apply for an extension of the term of any patent included within the Patent Rights, as Vaccinex in its discretion deems appropriate. In the event that applicable law in any other country of the world hereafter provides for the extension of the term of any patent included in the Patent Rights in such country, upon request by Vaccinex, Rochester shall use its best efforts to obtain such extension or, in lieu thereof, shall authorize Vaccinex or, if requested by Vaccinex, its sublicensee to apply for such extension, in consultation with Rochester. Rochester agrees to cooperate with Vaccinex or its sublicensee, as applicable, in the exercise of the authorization granted herein and will execute such documents and take such additional action as Vaccinex may reasonably request in connection therewith, including, if necessary, permitting itself to be joined as a proper party in any suit for infringement brought by Vaccinex under subsection (ii) above. Any damages awarded under any suit for infringement brought by Vaccinex under subsection (ii) above shall be divided among the Parties as set forth in Section 6.5. In the event Vaccinex decides not to commence suit for infringement under subsection (ii) above, Vaccinex will notify Rochester of its decision within [***] so that Rochester may institute such litigation itself, if it wishes, at its own cost and expense.

7. TERM AND TERMINATION

7.1 Term of Agreement. Unless earlier terminated as hereinafter provided, this Agreement shall extend for the life of the last to expire patent issued on the Subject Technology and shall then expire automatically. After such expiration, Vaccinex shall have a perpetual, royalty-free license to make, use, sell, offer to sell, and sublicense the Subject Technology.

7.2 Vaccinex Rights. Vaccinex shall have the right, at its option, to terminate this Agreement without cause upon ninety (90) days prior written notice to Rochester.

7.3 Breach of Agreement. In the event of default or failure by either Party to perform any of the terms, covenants or provisions of this Agreement, such Party shall have [***] after the giving of written notice of such default by the other Party to correct such default. If such default is not corrected within the said [***] period, the other Party shall have the right, at its option, to cancel and terminate this Agreement. The failure of a Party to exercise such right of termination for non-payment of royalties or otherwise shall not be deemed to be a waiver of any right a Party might have, nor shall such failure preclude such Party from exercising or enforcing said right upon any subsequent default.

7.4 Bankruptcy. Rochester shall have the right, at its option, to cancel and terminate this Agreement in the event that Vaccinex shall (i) become involved in insolvency, dissolution, bankruptcy or receivership proceedings affecting the operation of its business or (ii) make an assignment of all or substantially all of its assets for the benefit of creditors, or in the event that (iii) a receiver or trustee is appointed for Vaccinex and Vaccinex, after the expiration of [***] following any of the events enumerated above, has been unable to secure a dismissal, stay or other suspension of such proceedings.

7.5 Effect of Termination. At the date of any termination of this Agreement pursuant to Section 7.2, Section 7.3 for breach by Vaccinex, or pursuant to Section 7.4, as of the receipt by Vaccinex of notice of such termination, all rights to the Subject Technology shall revert to Rochester and Vaccinex shall immediately cease using any of the Subject Technology and return all copies of the same to Rochester; provided, however, that Vaccinex may dispose of any Licensed Products actually in the possession of Vaccinex or its agents prior to the date of termination, subject to Vaccinex's paying to Rochester running royalties in accordance with Section 3.2 with respect thereto and otherwise complying with the terms of this Agreement.

7.6 No Waiver. No termination of this Agreement shall constitute a termination or a waiver of any rights of either Party against the other Party accruing at or prior to the time of such termination.

8. ASSIGNABILITY

This Agreement may not be assigned in whole or in any part by any Party except that Vaccinex may assign all or any part of this Agreement to any Affiliate.

9. GOVERNMENTAL COMPLIANCE

Vaccinex shall at all times during the term of this Agreement and for so long as it shall sell Licensed Products comply and cause its sublicensees to comply with all laws that may control the import, export, manufacture, use, sale, marketing, distribution and other commercial exploitation of Licensed Products.

10. GOVERNING LAW

This Agreement shall be deemed to have been made under, and shall be construed and interpreted in accordance with, the laws of the State of New York, USA.

11. NOTICES

Any payment, notice or other communication pursuant to this Agreement shall be considered given on the date of receipt by the other party, addressed to it at its address below or as it shall designate by written notice given to the other Party:

In the case of Rochester to:	Office of Technology Transfer, Director University of Rochester 518 Hylan Building Rochester, New York 14627 Telephone Number: [***] Fax Number: [***]
With a copy to:	Office of Counsel to the Medical Center Director 601 Elmwood Avenue, Box 308 Rochester, New York 14642 Telephone Number: [***] Fax Number: [***]
In the case of Vaccinex to:	Albert Freidberg Vaccinex, L.P. c/o Freidberg Mercantile Group BCE Place 181 Bay Street - Suite 250 Toronto, Ontario M5J 2T3 Telephone Number: (416) 350-2890 Fax Number: [***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

With a copy to:

Sherry M. Knowles & W. Richard Smith, Jr.
King & Spalding
191 Peachtree Street
Atlanta, Georgia 30303-1763
Main Telephone Number: (404) 572-4600
Main Fax Number: (404) 572-5100

If written notice is given via facsimile, the original signed document must be delivered promptly thereafter.

12. MISCELLANEOUS PROVISIONS

12.1 Independent Contractors. The Parties hereby acknowledge and agree that each is an independent contractor and that neither Party shall be considered to be the agent, representative, master or servant of the other Party for any purpose whatsoever, and that neither Party has any authority to enter into a contract, to assume any obligation or to give warranties or representations on behalf of the other Party. Nothing in this relationship shall be construed to create a relationship of joint venture, partnership, fiduciary or other similar relationship between the Parties.

12.2 Rochester's Disclaimers. Neither Rochester, nor any of its faculty members, researchers, trustees, officers, employees, directors, or agents assume any responsibility for the manufacture, product specifications, sale or use of the Subject Technology or the Licensed Products which are manufactured by or sold by Vaccinex pursuant to this Agreement.

12.3 WARRANTIES. Each party hereto represents to the other party that it is free to enter into this Agreement and to carry out all of the provisions hereof including, in the case of Rochester, its grant to Vaccinex of the license set forth in Section 2.1. EXCEPT AS SET FORTH ABOVE, ROCHESTER MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF FITNESS OR MERCHANTABILITY, REGARDING OR WITH RESPECT TO THE SUBJECT TECHNOLOGY OR LICENSED PRODUCTS AND ROCHESTER MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESSED OR IMPLIED, OF THE PATENTABILITY OF THE SUBJECT TECHNOLOGY OR LICENSED PRODUCTS OR OF THE ENFORCEABILITY OF ANY PATENTS ISSUING THEREUPON , IF ANY, OR THAT THE SUBJECT TECHNOLOGY OR LICENSED PRODUCTS ARE OR SHALL BE FREE FROM INFRINGEMENT OF ANY PATENT OR OTHER RIGHTS OF THIRD PARTIES.

12.4 Reformation. All Parties hereby agree that neither Party intends to violate any public policy, statutory or common law, rule, regulation, treaty or decision of any government agency or executive body thereof of any country or community or association of countries; that if any word, sentence, Section or clause or combination thereof of this Agreement is found, by a

court or executive body with judicial powers having jurisdiction over this Agreement or any of its Parties hereto, in a final unappealed order to be in violation of any such provision in any country or community or association of countries, such words, sentences, Sections or clauses or combination shall be inoperative in such country or community or association of countries, and the remainder of this Agreement shall remain binding upon the Parties hereto.

12.5 Force Majeure. No liability hereunder shall result to a Party by reason of delay in performance caused by force majeure, that is circumstances beyond the reasonable control of the Party, including, without limitation, acts of God, fire, flood, war, civil unrest, labor unrest, or shortage of or inability to obtain material as equipment.

12.6 Dispute. The Parties will attempt in good faith to resolve any controversy or dispute arising out of or relating to this Agreement promptly by negotiations between or among the parties. Any and all claims, disputes or controversies arising under, out of, or in connection with this Agreement, including any dispute relating to patent validity or infringement and appropriate license terms and royalties, which have not been resolved by good faith negotiations between the parties shall be resolved by final and binding arbitration in Rochester, New York, under the rules of the American Arbitration Association, or the Patent Arbitration Rules if applicable. The arbitrators shall have no power to add to, subtract from or modify any of the terms or conditions of this agreement. Any award rendered in such arbitration may be enforced by either party in either the courts of the State of New York or in the United States District Court for the District of New York, to whose jurisdiction for such purposes Rochester and Vaccinex each hereby irrevocably consents and submits.

12.7 Modification. No amendment or modification of this Agreement shall be effective unless it is in writing and signed by duly authorized representatives of all Parties.

12.8 Entire Agreement. The terms and conditions herein constitute the entire agreement between the Parties and shall supersede all previous agreements, either oral or written, between the Parties hereto with respect to the subject matter hereof. No agreement of understanding bearing on this Agreement shall be binding upon either Party hereto unless it shall be in writing and signed by the duly authorized officer or representative of each of the Parties and shall expressly refer to this Agreement.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

IN WITNESS WHEREOF, the Parties hereto have executed and delivered this Agreement in multiple originals by their duly authorized officers and representatives on the respective dates shown below, but effective as of the Effective Date.

VACCINEX, L.P.

By: Vaccinex (Rochester) LLC,
its General Partner

By: /s/ Albert Friedberg
Albert Friedberg,
its Chief Financial Officer

UNIVERSITY OF ROCHESTER

By: /s/ Ojas P. Mehte
Name: Ojas P. Mehte
Title: Acting Director, Office of Technology Transfer

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

EXHIBIT A

PATENT APPLICATION

[***].

[***] INDICATES ONE PAGE OF MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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CONFIDENTIAL

GPEx® DEVELOPMENT AND MANUFACTURING AGREEMENT

This GPEx® Development and Manufacturing Agreement ("**Agreement**") is made as of January 13, 2010 ("**Effective Date**"), by and between Vaccinex, Inc., a with a place of business at 1895 Mt. Hope Avenue, Rochester, NY 14620, USA ("**Vaccinex**") and Catalent Pharma Solutions, LLC, a Delaware limited liability company, with a place of business at 14 Schoolhouse Road, Somerset, New Jersey 08873, USA ("**Catalent**").

RECITALS

A. Vaccinex is a pharmaceutical company that discovers and develops pharmaceutical products;

B. Catalent provides a range of analytical, development and clinical supply services to the pharmaceutical industry;

C. Catalent and its Affiliates hold certain proprietary cell line engineering and gene expression technology for the expression of proteins ("**GPEx Technology**"), which proteins can be used in drug products;

D. Vaccinex and Catalent have entered into that certain Material Transfer and Evaluation Agreement dated February 20, 2007, as amended on August 8, 2008 and July 9, 2009 (the "**MTA**"), and if the outcome of the Services under this Agreement is successful, the parties anticipate that they may enter into a Cell Line Sale Agreement on terms to be agreed upon by the parties as further described herein;

E. Vaccinex and Catalent have entered into that certain Letter of Intent dated June 29, 2009 (the "**LOI**"), setting forth certain pricing arrangements to apply if and when the parties execute appropriate relevant definitive agreements; and

F. Vaccinex and Catalent desire to enter into this Agreement to provide the terms and conditions upon which Vaccinex may engage Catalent to provide services as defined in individual Statements of Work ("**SOW**", as further defined below) specifying the details of the services and the related terms and conditions.

THEREFORE, in consideration of the mutual covenants, terms and conditions set forth below, the parties agree as follows:

ARTICLE 1
DEFINITIONS

The following terms have the following meanings in this Agreement:

1.1 "**Affiliate(s)**" means, with respect to Vaccinex or any third party, any corporation, firm, partnership or other entity that controls, is controlled by or is under common control with such entity; and with respect to Catalent, Catalent Pharma Solutions, Inc. ("**CPS, Inc.**") and any corporation, firm, partnership or other entity controlled by CPS, Inc. For the purposes of this definition, "**control**" shall mean the ownership of at least 50% of the voting share capital of an entity or any other comparable equity or ownership interest.

1.2 “**Agreement**” has the meaning set forth in the introductory paragraph, and includes all its Attachments and other appendices (all of which are incorporated herein by reference) and any amendments to any of the foregoing made as provided herein or therein.

1.3 “**Applicable Laws**” means all laws, ordinances, rules and regulations of the United States applicable to the Facility, the Services or any aspect thereof and the obligations of Catalent or Vaccinex, as the context requires under this Agreement, as amended from time to time, including (A) all applicable federal, state and local laws and regulations of the United States; (B) the U.S. Federal Food, Drug and Cosmetic Act, and (C) cGMP; *provided*, that cGMP shall not constitute Applicable Laws except to the extent expressly stated in the applicable SOW.

1.4 “**Batch Record**” has the meaning set forth in Section 2.12.

1.5 [***].

1.6 “**Catalent**” has the meaning set forth in the introductory paragraph, or any successor or permitted assign. Catalent shall have the right to cause any of its Affiliates to perform any of its obligations hereunder, and Vaccinex shall accept such performance as if it were performance by Catalent.

1.7 “**Catalent Indemnitees**” has the meaning set forth in Section 9.2.

1.8 “**Catalent Intellectual Property**” means all Intellectual Property and embodiments thereof owned by or licensed to Catalent as of the date hereof or developed by Catalent other than in connection with this Agreement, including the GPEx Technology.

1.9 “**Cell Line Sale Agreement**” means Catalent’s standard form of GPEx®-Derived Cell Line Sale Agreement, a reference copy of the current version of which has previously been provided to Vaccinex.

1.10 “**cGMP**” means current Good Manufacturing Practices promulgated by the Regulatory Authorities in the United States, including within the meaning of 21 C.F.R. Parts 210 and 211, as amended.

1.11 “**Change Order**” means an amendment to a SOW agreed to by the parties in writing in accordance with the terms set forth in Section 2.2.

1.12 “**Confidential Information**” has the meaning set forth in Section 6.2.

1.13 “**Defective Drug Product**” has the meaning set forth in Section 4.1.

1.14 “**Development Batch**” has the meaning set forth in Section 4.4.

1.15 “**Drug Substance**” means Expression Product that has been purified and refined in compliance with the applicable Specifications, as identified in the applicable SOW and which is the subject of the Services to be provided pursuant to a SOW.

1.16 “**Drug Product**” means the drug product containing the Drug Substance, as identified in the applicable SOW and which is the subject of the Services to be provided pursuant to a SOW.

1.17 “**Effective Date**” has the meaning set forth in the introductory paragraph.

1.18 “**Exception Notice**” has the meaning set forth in Section 4.1.

1.19 “**Expression Product**” means the [***], as identified in the applicable SOW and which is the subject of the Services to be provided pursuant to a SOW.

1.20 “**Facility**” means the Catalent facility located at 8137 Forsythia Street, Middleton, Wisconsin 53562, and/or such other facility specified in the applicable SOW.

1.21 “**Fill Finish**” means the compounding, filling, producing and primary packaging of Drug Product in accordance with the applicable Specifications.

1.22 “**GPEx Cell Line**” means the cell line created by Catalent under the Project Documents utilizing the GPEx Technology and incorporating Material, as identified in the applicable SOW and which is the subject of the Services to be provided pursuant to a SOW.

1.23 “**GPEx Technology**” has the meaning set forth in Recital C.

1.24 “**Intellectual Property**” means all intellectual property (whether or not patented), including without limitation, patents, patent applications, know-how, trade secrets, copyrights, trademarks, designs, concepts, technical information, manuals, standard operating procedures, instructions, specifications, inventions, processes, data, improvements and developments.

1.25 “**Invention**” means any Intellectual Property developed by either party or jointly by the parties in connection with this Agreement (including all SOWs and Change Orders under this Agreement).

1.26 “**LOI**” has the meaning set forth in Recital E.

1.27 “**Losses**” has the meaning set forth in Section 9.1.

1.28 “**Manufacturing**” means the production of Expression Product from [***].

1.29 “**Material**” means any cDNA, mammalian cell line or other similar biologic material provided by or on behalf of Vaccinex to Catalent.

1.30 “**MTA**” has the meaning set forth in Recital D.

1.31 “**Packaging Cell Line**” means a cell line created primarily for the purpose of producing [***].

1.32 “**Production Cell Line**” means a cell line created primarily for the purpose of producing the Expression Product.

1.33 “**Process Invention**” means any Invention, other than a Vaccinex Invention that relates to (A) Catalent Intellectual Property, (B) Catalent’s Confidential Information, (C) gene expression in cells, vectors for gene expression, or Packaging Cell Lines, or associated manufacturing processes (including cell culture and protein purification processes), or (D) developing, formulating, manufacturing, filling, processing, packaging, analyzing or testing biologic or pharmaceutical products generally.

1.34 “**QC Hold Waiver**” has the meaning set forth in Section 5.6.

1.35 “**Quality Agreement**” has the meaning set forth in Section 5.4.

1.36 “**Regulatory Authority**” means the international, federal, state or local governmental or regulatory bodies, agencies, departments, bureaus, courts or other entities responsible for (A) the regulation (including pricing) of any aspect of pharmaceutical or medicinal products intended for human use or (B) health, safety or environmental matters generally.

1.37 “**Replacement Cost**” has the meaning set forth in Section 4.1.

1.38 “**Research License**” has the meaning set forth in Section 7.5(A).

1.39 “**Services**” means all work, including analytical services, development services, pre-commercial/clinical Manufacturing services or pre-commercial/clinical Fill Finish services, performed by Catalent for Vaccinex pursuant to a SOW.

1.40 “**SOPs**” has the meaning set forth in Section 2.5.

1.41 “**SOW**” means a separate Statement of Work on Catalent’s standard form agreed to and executed by the parties that defines the scope of work to be performed by Catalent and the responsibilities of the parties with respect to such work, which statements of work shall be appended hereto at Attachment A as successive addenda upon execution thereof.

1.42 “**Subcontractors**” has the meaning set forth in Section 2.6.

1.43 “**Specifications**” means all applicable written Drug Substance, Drug Product, and raw material specifications agreed to by the parties in the SOW.

1.44 “**Sterility Issue**” has the meaning set forth in Section 4.1.

1.45 “**Term**” has the meaning set forth in Section 12.1.

1.46 “**Vaccinex**” has the meaning set forth in the introductory paragraph, or any successor or permitted assign.

1.47 “**Vaccinex Indemnitees**” has the meaning set forth in Section 9.1.

1.48 "**Vaccinex Intellectual Property**" means all Intellectual Property and embodiments thereof owned by or licensed to Vaccinex as of the date hereof or developed by Vaccinex other than in connection with this Agreement.

1.49 "**Vaccinex Invention**" means any Invention that relates exclusively to Materials, Vaccinex's Confidential Information or Vaccinex Intellectual Property.

1.50 "**Vaccinex-supplied Materials**" means any Material or other tangible materials (including any components and packaging) provided by or on behalf of Vaccinex to Catalent, including pursuant to Section 2.8.

1.51 "**Vector**" shall mean a replication defective retroviral particle pseudotyped with a heterologous envelope protein to render the particles infectious to cells.

ARTICLE 2
SCOPE

2.1 Definition of Scope. Catalent shall use commercially reasonable efforts to perform the Services in accordance with the specific terms set forth in a SOW. Each SOW shall clearly define the Services, Materials, Vaccinex-supplied Materials, Expression Product, Drug Substance and Drug Product, and the responsibilities of the parties with respect to the project work. Each SOW will include, as appropriate, a specific description of (A) the Services to be performed by Catalent, (B) the total budgeted amount, including fees, labor rates, and estimated reimbursable expenses applicable to such Services, (C) the timelines and schedules for the performance of such Services, (D) the deliverables that Catalent shall be obligated to deliver to Vaccinex, and (E) such other matters as may be appropriate. Each SOW shall be sequentially numbered as Exhibit Al, Exhibit A2, etc., and, when executed by both parties, shall be deemed incorporated by this reference into this Agreement and shall form a part of Exhibit A to this Agreement. Each SOW shall be subject to, and shall incorporate by reference, all of the terms and conditions of this Agreement. To the extent any terms or conditions of a SOW conflict with the terms and conditions of this Agreement, the terms and conditions of this Agreement shall control, except to the extent that the applicable SOW expressly and specifically states an intent to supersede this Agreement on a specific matter. This Agreement shall supersede the terms of any purchase order, acknowledgement or delivery document. This Agreement shall not impair or affect the terms of any other development, license, manufacturing or packaging agreement between Vaccinex and Catalent or their respective Affiliates.

2.2 Amendments to Scope/Change Orders. Any material change in the details of a SOW or the assumptions upon which the SOW is based (including, but not limited to, postponement of the agreed starting date for Services or suspension of Services by Vaccinex) may require changes in the pricing and time lines, and shall require a written amendment to the SOW (a "**Change Order**"). Each Change Order shall detail the requested changes to the applicable task, responsibility, duty, pricing, time line or other matter. The Change Order will become effective upon the execution of the Change Order by both parties, and Catalent will be given a reasonable period of time within which to implement the changes. Both parties shall act in good faith and promptly when considering a Change Order requested by the other party. Without limiting the foregoing, Vaccinex shall not unreasonably withhold approval of a Change Order if the proposed changes in pricing or time lines result from, among other appropriate reasons, forces outside the reasonable control of Catalent and are commercially reasonable or changes in the

assumptions upon which the initial pricing or time lines were based. Catalent shall not be obligated to perform any modified or additional Services until a Change Order has been executed by the parties with respect to such Services.

2.3 Vaccinex Responsibilities. Unless otherwise agreed by the parties in writing or in the SOW, Vaccinex agrees that it will (A) provide complete and accurate scientific data regarding each project described in a SOW and its requirements for such project, including test methods and development, formulation, fill and finish of the Drug Product if applicable, (B) provide Catalent with complete and accurate information necessary to develop the SOW, including scope of work and estimated or fixed costs, (C) review and approve all specifications for work or Drug Product, (D) if applicable, review and approve all in-process and finished Drug Product test results to ensure conformity of such results with the agreed Drug Product specifications, regardless of which party is responsible for finished Drug Product release, and (E) if applicable, prepare all submissions to Regulatory Authorities in connection with the Drug Product.

2.4 Catalent Responsibilities. Catalent shall perform all Services: (A) in a reasonable manner consistent with the professional standards generally applicable to such Services; (B) in compliance with all Applicable Laws; and (C) in compliance with all reasonable written directions and requests of Vaccinex, so long as such direction and requests do not conflict with and violate any of the terms and conditions of this Agreement, any of Catalent's SOPs (subject to Section 2.5) or any Applicable Law. In the event of a conflict between or among any of the standards set forth in this Section 2.4, Catalent shall be required to comply with the most stringent standard which is permitted by Applicable Law. Except for (i) any Vaccinex-supplied Materials, (ii) items that are Vaccinex's responsibility pursuant to Section 3.1(C), or (iii) as otherwise specified under this Agreement or the applicable SOW, Catalent shall at its cost and expense purchase all materials and components necessary to perform the Services and provide all necessary personnel, facilities and equipment required to perform the Services.

2.5 Standard Operating Procedures. Catalent's standard operating procedures ("**SOPs**") used by Catalent in performing Services under any particular SOW shall be in compliance with all Applicable Laws. Prior to the execution of each SOW, and subject to the confidentiality provisions of this Agreement, Catalent shall make available to Vaccinex for review only via protected electronic means one confidential, restricted copy of Catalent's SOPs, if any, which are applicable to the Services described in such SOW. Vaccinex may, from time to time in respect of a particular SOW, request the use of certain designated Vaccinex SOPs or request the use of a combination of Catalent SOPs and Vaccinex SOPs. Any such request by Vaccinex shall be set forth in writing and shall include a proposed transition period and/or effective date for implementation. If Catalent agrees to such request, an appropriate letter agreement shall be signed by both parties, after which Catalent shall promptly implement such modified SOPs as set forth therein. For the avoidance of doubt, the first sentence of this Section 2.5 shall not apply to any such modified SOPs.

2.6 Subcontractors. Catalent shall not subcontract to its Affiliates or to Third Parties (in such capacity, "**Subcontractors**") any Services that Catalent is obligated to perform under this Agreement without, in each case, Vaccinex's prior written approval, in its reasonable discretion. If Catalent proposes use of Subcontractors for particular laboratory services or other Services, Vaccinex may require and Catalent shall use commercially reasonable efforts to ensure Vaccinex has access to such Subcontractors for audit purposes. If Vaccinex preapproves a Subcontractor in writing, (1) Catalent shall enter into an agreement with such Subcontractor that contains confidentiality terms at least as strict as those set forth

herein, as well as any other terms necessary to ensure that Catalent meets its obligations under this Agreement, and (2) no such subcontracting by Catalent shall relieve Catalent of and Catalent shall remain primarily liable for its obligations under this Agreement; *provided*, that Catalent shall not be liable for any defects in the work product of any Subcontractors who are not Affiliates. For the avoidance of doubt, any Subcontractors named in an SOW signed by Vaccinex shall be deemed approved by Vaccinex for purposes of this Section 2.6.

2.7 Project Managers. Each party shall designate one project manager for each SOW, who shall be responsible for providing decisions relating to such SOW, as well as communicating to each other technical and operational issues regarding the Services.

2.8 Vaccinex-supplied Material. Except as expressly set forth in a SOW, Vaccinex will provide all samples, reference materials, components, raw materials, Materials and Drug Product, as applicable, required for each SOW. Within [***] of receipt of Vaccinex-supplied Materials by Catalent, Catalent shall inspect such items to verify their identity. Unless otherwise expressly required by the Specifications, Catalent shall have no obligation to test such items to confirm that they meet the associated specifications or certificate of analysis or otherwise; but in the event that Catalent detects a nonconformity with applicable specifications, Catalent shall give Vaccinex prompt oral and written notice of such nonconformity. Catalent shall not be liable for any defects in Vaccinex-supplied Materials, or in Services, Expression Product, Drug Substance or Drug Product that result from defective Vaccinex-supplied Materials, unless Catalent failed to properly perform the foregoing obligations. Catalent shall follow Vaccinex's reasonable written instructions in respect of return or disposal of defective Vaccinex-supplied Materials, at Vaccinex's sole cost and risk. Vaccinex shall retain title to Vaccinex-supplied Materials at all times and shall bear the risk of loss thereof.

2.9 Error. In the event of a material error by Catalent in performing any Services, including but not limited to any process contamination, Vaccinex shall have the option, at its reasonable discretion, to either have Catalent repeat the relevant Services at Catalent's own cost (i.e., Vaccinex shall pay in full for either the erroneous Services or the repeated Services, but not both) or receive a full credit for fees paid (and cancel any fees payable) for the relevant Services. In the event that Vaccinex elects to have Catalent repeat the Services, Vaccinex shall supply, [***], Catalent with sufficient quantities of Vaccinex- supplied Materials in order for Catalent to complete such re-performance.

2.10 Delivery. Catalent shall tender all Expression Product, Drug Substance, Drug Product, raw materials and components, samples, and other deliverables to be delivered pursuant to a SOW or this Agreement for delivery EXW (Incoterms 2000) the Facility. Title to such items shall transfer upon tender of delivery.

2.11 Failure to Take Delivery. If Vaccinex fails to take delivery of any Expression Product, Drug Substance, Drug Product, raw materials, components or other deliverables on any scheduled delivery date, Catalent shall store such items as Vaccinex's agent, and Vaccinex shall be invoiced for the stored items and invoiced on a [***] basis thereafter for reasonable administration and storage costs. Vaccinex agrees that: (A) Vaccinex has made a fixed commitment to accept and pay for, if applicable, such items; (B) title and risk of ownership for such items passes to Vaccinex upon the scheduled delivery date or transfer to storage, whichever is earlier; (C) such items shall be on a bill and hold basis for legitimate business purposes; (D) if no delivery date is determined at the time of billing, Catalent shall have the right to ship such items to Vaccinex within [***] after billing; and (E) Vaccinex will be responsible for any

decrease in market value of such items. Within [***] following a written request from Catalent, Vaccinex shall provide Catalent with a letter confirming items (A) through (E) of this Article in respect of a given undelivered item.

2.12 Samples and Excess Materials.

A. Catalent shall deliver to Vaccinex or its designee samples of all batches of Drug Substance or Drug Product upon quality release by Catalent and otherwise in accordance with the Quality Agreement. Catalent shall also provide the related consolidated batch record ("**Batch Record**") and any other batch documentation required to be provided by the Quality Agreement for each batch as soon as reasonably possible after each such batch is released and otherwise in accordance with the Quality Agreement. For the avoidance of doubt, Vaccinex's acceptance and/or rejection of Drug Substance and Drug Product shall governed by Article 4.

B. Following completion of each relevant phase of a SOW, retained samples will be stored at the Facility in accordance with Applicable Laws. After the expiration of any minimum hold periods required by Applicable Laws or specified in the SOPs or SOW if longer, Catalent will dispose of samples, at Vaccinex's cost, unless prior written instructions have been provided by Vaccinex for returning samples to Vaccinex at Vaccinex's cost. Within [***] following the termination of an SOW, Catalent will return all unused Vaccinex-supplied Materials associated with such SOW to Vaccinex at Vaccinex's cost, unless prior written instructions have been provided by Vaccinex for reallocating such materials to another SOW or disposing of such materials at Vaccinex's cost. Catalent will store any GPEx Cell Lines [***] during the term of the applicable SOW and for [***] thereafter, or until [***]. Following notification to Vaccinex in accordance with Article 13, Catalent shall destroy all GPEx Cell Lines upon expiration of such period, at Vaccinex's cost, unless Vaccinex shall have entered into a separate written agreement with Catalent for long-term storage at Catalent's then current rates.

ARTICLE 3
PRICING AND PAYMENT TERMS

3.1 Price and Price Changes.

A. Price. Vaccinex shall pay, in accordance with this Agreement and the applicable SOW, for Services rendered. For the avoidance of doubt, unless the parties otherwise mutually agree, the pricing for any Services related to projects where Phase A1 is scheduled to commence prior to December 31, 2009 pursuant to an executed SOW shall comply with the pricing guidelines set forth in the LOI.

B. Price Changes. Catalent may revise the prices provided in a SOW only if [***]. In addition, the prices provided in a SOW are subject to annual review by the parties to address changes in inflation, increased overhead charges, and other commercially reasonable factors.

C. Vaccinex-Specific Purchases. Vaccinex shall be responsible for the costs of all reference standards, specialty chemicals and similar Vaccinex-specific purchases required to perform the Services, unless provided to Catalent as Vaccinex-supplied Materials pursuant to Section 2.5 [***]. Catalent will provide to Vaccinex reasonable supporting documentation for such costs, such as the necessary bills of materials used or materials purchase invoices, if such costs are to be reimbursed to Catalent.

D. Retesting. All retesting performed that is not due to a Catalent error will be billed to Vaccinex. All required investigational studies or additional Vaccinex requests not outlined in the SOW will be invoiced for the cost of performance at the current standard pricing.

E. Out Of Specification Investigations. Catalent will use reasonable efforts to notify Vaccinex of the initiation of any out-of-specification investigation. Catalent reserves the right to expend up to [***] per occurrence to complete all required investigational work (such as out-of-Specification (00S) investigations, trouble shooting chromatographic methods, etc.) without prior approval from the Vaccinex. If the additional work requires going beyond [***], Vaccinex will be contacted prior to continuation.

F. Cancellations and Postponements. Vaccinex may cancel a SOW pursuant to Section 12.2, subject to Section 12.5. Vaccinex may postpone a SOW with Catalent's agreement pursuant to Section 2.2. If Vaccinex cancels pursuant to Section 12.2 or postpones pursuant to Section 2.2 all or any portion of a SOW, then, unless otherwise agreed by the parties, Vaccinex shall pay Catalent an accommodation fee as follows: [***].

G. Catalent's Cancellation of SOWs. Catalent reserves the right to cancel or postpone, in its discretion, any part of an affected SOW upon written notice to Vaccinex if Vaccinex refuses or fails to timely supply necessary and conforming Vaccinex-supplied Materials in accordance with Section 2.5. The parties shall use reasonable efforts to ensure that the SOW sets forth specific deadlines for delivery by Vaccinex of such materials and, in any event, the parties shall cooperate during the course of performance of an SOW to ensure that Vaccinex is aware of approaching deadlines for delivery of such materials, that Vaccinex informs Catalent of pending deliveries, and that Catalent informs Vaccinex if any such delivery is not made (in addition to Catalent's obligations pursuant to Section 2.8). In the event of cancellation, Catalent shall have no further obligations to perform with respect to such SOW. In the event of postponement, Catalent shall reschedule the work at the next available slot following receipt of conforming Vaccinex-supplied Materials. In either event, Vaccinex shall pay Catalent the amounts described in Section 12.5, as applicable.

3.2 Invoicing. Unless otherwise provided in the applicable SOW, Catalent shall invoice Vaccinex as follows:

A. for batch Manufacture and/or Fill Finish, upon the earliest to occur of the following: [***];

B. for any SOW that can be completed within [***] (other than batch Manufacture and/or Fill Finish), Catalent shall invoice Vaccinex [***];

C. for any SOW that cannot be completed within [***] (other than batch Manufacture and/or Fill Finish), Catalent shall invoice Vaccinex [***]; or

D. for any milestone payment, when the milestone trigger event occurs.

3.3 Payment Terms. Vaccinex shall make payment in U.S. dollars, and otherwise as directed in the applicable invoice. In the event payment is not received by Catalent on or before the [***] after the date of the invoice, then Catalent may, in addition to any other remedies available at equity or in law, at its

option elect to do any one or more of the following: (A) charge interest on the outstanding sum from the due date (both before and after any judgment) at [***] until paid in full (or, if less, the maximum amount permitted by Applicable Laws); (B) suspend any further performance hereunder until such invoice is paid in full; and/or (C) terminate this Agreement pursuant to Section 12.3.

3.4 Advance Payment. If at any time, Catalent determines in its reasonable discretion based on payment history or publicly available information that Client's credit is impaired, Catalent shall have the right to require payment in advance before performing any further Services or making any further shipment of the Drug Product. If Client shall fail, within a reasonable time, to make such payment in advance, Catalent shall have the right, at its option, to suspend any further performance hereunder until such default is corrected, without thereby releasing Client from its obligations under this Agreement.

3.5 Taxes. All taxes, duties and other amounts assessed (excluding tax based on net income and franchise taxes) on Services, components, Expression Product, Drug Substance or Drug Product prior to or upon provision or sale to Catalent or Vaccinex, as the case may be, and on any other Vaccinex-supplied Materials, are the responsibility of Vaccinex, and Vaccinex shall reimburse Catalent for all such taxes, duties or other expenses paid by Catalent or such sums will be added to invoices directed at Vaccinex, where applicable. If any deduction or withholding in respect of tax or otherwise is required by law to be made from any of the sums payable hereunder, Vaccinex shall be obliged to pay to Catalent such greater sums as will leave Catalent, after deduction of withholding as is required to be made, with the same amount as it would have been entitled to receive in the absence of any such requirement to make a deduction or withholding.

ARTICLE 4
MANUFACTURING AND FILL FINISH

To the extent the Services include pre-commercial/clinical Manufacturing and/or Fill Finish services, the following shall apply:

4.1 Non-Conforming Drug Substance or Drug Product. Subject to Section 4.4, unless within [***] after tender of delivery of Drug Substance or Drug Product, as applicable, and the associated Batch Record, Vaccinex or its designee notifies Catalent in writing (an "**Exception Notice**") that such Drug Substance or Drug Product does not meet the warranty set forth in Section 8.1(B) ("**Defective Drug Product**"), the Drug Substance or Drug Product shall be deemed accepted by Vaccinex, and Vaccinex shall have no right to reject such Drug Substance or Drug Product. Upon timely receipt of an Exception Notice from Vaccinex, Catalent shall conduct an appropriate investigation in its discretion to determine whether or not it agrees with Vaccinex that Drug Substance or Drug Product is Defective Drug Product and to determine the cause of any nonconformity. In the event that Catalent or an independent third party pursuant to Section 4.2 determines that the rejected Drug Substance or Drug Product is Defective Drug Product, Catalent shall [***], and Vaccinex shall [***].

THE OBLIGATIONS OF CATALENT UNDER THIS SECTION 4.1 SHALL BE VACCINEX'S SOLE AND EXCLUSIVE REMEDY UNDER THIS AGREEMENT FOR DEFECTIVE DRUG PRODUCT AND IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, PROVIDED, HOWEVER, THAT THE FOREGOING LIMITATION OF LIABILITY SHALL NOT APPLY TO CLAIMS ARISING UNDER SECTION 9 (INDEMNIFICATION). The Parties agree that for purposes of this Section 4.1, neither Party shall be considered an "employee or agent" of the other Party.

4.2 Discrepant Results. In the event of a disagreement between the parties regarding whether Drug Substance or Drug Product is Defective Drug Product and/or the cause of the nonconformity, which disagreement cannot be resolved by the parties within [***] of the date of the Exception Notice, the parties shall cause a mutually agreeable independent third party to review records, test data and to perform comparative tests and/or analyses on samples of the alleged Defective Drug Product and its components, including Vaccinex-supplied Materials. The independent party's results as to whether or not Drug Substance or Drug Product is Defective Drug Product and the cause of any nonconformity shall be final and binding. Unless otherwise agreed to by the parties in writing, the costs associated with such testing and review shall be borne by the party proven incorrect regarding either the existence of Defective Drug Product or the cause of the nonconformity. For avoidance of doubt, where the cause of nonconformity cannot be determined or assigned, the parties shall share the cost associated with testing and review.

4.3 Supply of Vaccinex-supplied Material for Defective Drug Product. [***] Vaccinex shall supply, [***], sufficient quantities of the Vaccinex-supplied Materials [***].

4.4 Development/Initial Batches. Each batch of Drug Substance or Drug Product manufactured under this Agreement will be considered to be a "**Development Batch**" until manufacturing, testing and storage methods and processes have been validated or qualified in accordance with industry standards (including production of at least [***] batches of Drug Substance or Drug Product, as applicable, that meet the applicable Specifications). The term "**Development Batch**" shall include any batch manufactured following (A) a change in Specifications, or (B) a scale-up in the manufacturing process to produce greater quantities of Drug Product, until Catalent has manufactured [***] batches of Drug Product meeting the new Specifications. [***]. Catalent and Vaccinex shall cooperate in good faith to resolve any problems causing the out-of-Specification batch.

ARTICLE 5
REGULATORY

5.1 Audit.

A. Subject to Catalent's obligations of confidentiality to third parties, Catalent will permit Vaccinex to conduct one quality assurance audit [***] during the Term, and additional "for cause audits" (to the extent expressly permitted by the Quality Agreement), in accordance with the audit provisions set forth in the Quality Agreement, of those portions of the Facility where Services are being conducted upon reasonable advance notice and at reasonable times during regular business hours.

B. Catalent shall allow no more than [***] Vaccinex representatives at the Facility to periodically observe Manufacturing activities related to Drug Substance and/or Drug Product, excluding any proprietary processes of Catalent (such as the execution of the GPEx Technology), in accordance with the Quality Agreement.

C. For purposes of this Section 5.1, Vaccinex's duly authorized agents and representatives shall be required to sign Catalent's standard confidential disclosure agreement prior to being allowed access to the Facility. Such representatives shall comply with Catalent's rules and regulations. Vaccinex shall indemnify and hold harmless Catalent for any action or activity of such representatives while on Catalent's premises.

5.2 Regulatory Inspections. Each party shall: (A) notify the other party promptly (but in no event more than [***] after receipt of notice) of any inspection or inquiry by any Regulatory Authority concerning any SOW, Drug Substance or Drug Product; and (B) forward to the other party copies of any correspondence from any Regulatory Authority relating to such a SOW, Drug Substance or Drug Product, including, but not limited to, Form FD-483 notices, FDA refusal to file, rejection or warning letters. Each party acknowledges that it may not direct the manner in which the other party fulfills its obligations to permit inspection by a Regulatory Authority. Vaccinex may send, at Vaccinex's expense, and Vaccinex shall, upon the request and at the expense of Catalent send, representatives to the Facility to participate in any portion of such inspection directed exclusively to the SOW, Drug Substance or Drug Product. Vaccinex shall reimburse Catalent for all reasonable and documented out-of-pocket costs associated with inspections by Regulatory Authorities that are exclusively in connection with any SOW hereunder. In the event that any Regulatory Authority shall determine, as a result of an inspection, and advise Catalent in writing that Catalent is not in compliance with Applicable Laws or otherwise not in compliance with cGMP (if applicable) with respect to the manufacture of Drug Substance or Drug Product or performance of Services, Catalent shall at its expense use all reasonable efforts to dispute or cure such non-compliance as soon as practicable; *provided*, that if Catalent elects in its sole discretion not to dispute such finding or take such curative measures, Catalent shall promptly notify Vaccinex of such decision, whereupon Vaccinex shall have the right to terminate this Agreement upon written notice to Catalent given within [***] of Vaccinex's receipt of Catalent's decision notice.

5.3 Record Retention. Unless the parties otherwise agree in writing, Catalent shall maintain materially complete and accurate batch, laboratory and other technical records related to Drug Substance and Drug Products for the minimum period required by Applicable Laws, in accordance with Catalent standard operating procedures.

5.4 Quality Agreement. The parties have entered into a Quality Agreement attached hereto as Attachment B. If determined necessary by Catalent, the parties shall enter into separate Quality Agreements for different Facilities. The Parties shall review the Quality Agreement at least annually and shall revise it or make any necessary amendments thereto as may be agreed. Such amendments or revisions shall become effective, and considered a part of this Agreement, upon execution by all of the Parties. In the event of a conflict between any of the provisions of this Agreement and the Quality Agreement with respect to quality-related activities, including compliance with cGMP, the provisions of the Quality Agreement shall govern. In the event of a conflict between any of the provisions of this Agreement and the Quality Agreement with respect to any commercial matters, including allocation of risk, liability and financial responsibility, the provisions of this Agreement shall govern.

5.5 Regulatory Compliance. Vaccinex shall be solely responsible for and will obtain all permits and licenses required by any Regulatory Authority with respect to the Drug Substance or Drug Product and the Services under this Agreement, including any product licenses, applications and amendments in connection therewith. Catalent will be responsible to maintain all permits and licenses required by any Regulatory Authorities in the United States with respect to the Facility generally. During the Term, Catalent will assist Vaccinex with all regulatory matters relating to Services under this Agreement, at Vaccinex's request and at Vaccinex's expense. Each party intends and commits to cooperate to satisfy all Applicable Laws relating to Services under this Agreement

5.6 Waiver of In Process Quality Control Holds. Project scheduling may include certain FDA "Points to Consider" (PTC) assays and other in-process assays, as set forth in a SOW. PTC and in-process

assays are typically required in "quality control (QC) holds" and may prevent a SOW from progressing to subsequent scheduled events until the results of these PTC and in-process assays are completed, documented and audited by the appropriate QC group. In the event that Vaccinex wishes to expedite a SOW by proceeding to subsequent project events without waiting for PTC and/or assay results ("**QC Hold Waiver**"), Vaccinex shall be fully responsible for the cost of all Services performed after the QC Hold Waiver even if the results of the PTC and/or other in-process tests indicate a problem with the project, Drug Substance or Drug Product, provided that such problem was not caused by Catalent's gross negligence or more culpable act or omission. Catalent shall remain responsible for activities up to the QC Hold Waiver to the extent provided in this Agreement.

5.7 Compliance with Laws. Catalent and Vaccinex shall, and shall cause their respective Affiliates (to the extent any such Affiliate is performing any of a party's obligations hereunder) to, comply with all Applicable Laws in all material respects. Catalent and Vaccinex allocate responsibility for complying with the cGMP (if applicable) between themselves as set forth in the Quality Agreement. Each party shall provide the other with all reasonable assistance and take all actions reasonably requested by the other to enable the requesting party to comply with any Applicable Law relating to the performance by a party of its obligations hereunder.

ARTICLE 6
CONFIDENTIALITY AND NON-USE

6.1 Mutual Obligation. Catalent and Vaccinex each agrees that it will not use the other party's Confidential Information except in connection with the performance of its obligations hereunder and will not disclose the other party's Confidential Information to any third party without the prior written consent of the other party, except as required by law, regulation or court or administrative order; *provided*, that prior to making any such legally required disclosure, the party making such disclosure shall give the other party as much prior notice of the requirement for and contents of such disclosure as is practicable under the circumstances. Notwithstanding the foregoing, each party may disclose the other party's Confidential Information to any of its Affiliates that (A) need to know such Confidential Information for the purpose of performing under this Agreement, (B) are advised of the contents of this Article and (C) agree to be bound by the terms of this Article.

6.2 Definition. As used in this Agreement, the term "**Confidential Information**" includes all such information furnished by Catalent or Vaccinex, or any of their respective representatives or Affiliates, to the other party or its representatives or Affiliates, whether furnished before, on or after the Effective Date and furnished in any form, including written, verbal, visual, electronic or in any other media or manner. Confidential Information includes all proprietary technologies, know-how, trade secrets, discoveries, inventions and any other Intellectual Property (whether or not patented), analyses, compilations, business or technical information and other materials prepared by either party, or any of their respective representatives or Affiliates, containing or based in whole or in part on any such information furnished by the other party or its representatives or Affiliates. Confidential Information also includes the existence of this Agreement and its terms.

6.3 Exclusions. Notwithstanding Section 6.2, Confidential Information does not include information that (A) is or becomes generally available to the public or within the industry to which such information relates other than as a result of a breach of this Agreement, (B) is already known by the receiving party at the time of disclosure as evidenced by the receiving party's written records, (C) becomes available to the

receiving party on a non-confidential basis from a source that is entitled to disclose it on a non-confidential basis or (D) was or is independently developed by or for the receiving party without reference to or use of the Confidential Information of the other party, as evidenced by the receiving party's written records.

6.4 No Implied License. Except as expressly set forth in Section 7.1, the receiving party will obtain no right of any kind or license under any Confidential Information of the disclosing party, including any patent application or patent, by reason of this Agreement. All Confidential Information will remain the sole property of the party disclosing such information or data, subject to Article 7.

6.5 Return of Confidential Information. Upon expiration or termination of this Agreement, the party receiving Confidential Information will cease its use and upon request, within [***] either return or destroy (and certify as to such destruction) all Confidential Information of the other party, including any copies thereof, except for a single copy thereof which may be retained for the sole purpose of determining the scope of the obligations incurred under this Agreement.

6.6 Return of Materials. Upon the earlier of expiration or termination of this Agreement or completion of a SOW, subject to Section 2.12(B), Catalent shall promptly return to Vaccinex all Vaccinex-supplied Materials relating to such SOW, and all data, results, samples, deliverables and works in progress relating to such SOW, at [***], provided that in no event shall Catalent be required to return or provide any Catalent Intellectual Property or Process Inventions.

6.7 Publication. Catalent shall not publish or otherwise disclose to any third person the results of any use of the Materials, including the use of the Materials in combination with Catalent's GPEx Technology, without the prior express written consent of Vaccinex. Vaccinex shall not publish or otherwise disclose to any third person the results of any use of the Materials in combination with Catalent's GPEx Technology without the prior express written consent of Catalent.

6.8 Survival. The obligations of this Article 6 will terminate [***] from the expiration or termination of this Agreement, except with respect to trade secrets, for which the obligations of this Article 6 will continue for so long as such information remains a trade secret under applicable law.

ARTICLE 7
INTELLECTUAL PROPERTY

7.1 Ownership of Vaccinex Intellectual Property and Vaccinex Inventions; License. All Vaccinex Intellectual Property and all Vaccinex Inventions shall be the sole and exclusive property of Vaccinex. Vaccinex grants to Catalent a non-exclusive, non-transferable, royalty-free license to use Vaccinex Intellectual Property and Vaccinex Inventions solely to the extent necessary for Catalent to perform its obligations under this Agreement. No other license to Vaccinex Intellectual Property or Vaccinex Inventions is hereby granted.

7.2 Ownership of Catalent Intellectual Property and Process Inventions. All Catalent Intellectual Property and all Process Inventions shall be the sole and exclusive property of Catalent. No license or other right to Catalent Intellectual Property or Process Inventions is granted to Vaccinex, except as set forth in Sections 7.5 and 7.6.

7.3 Assignment of Rights. If either party develops an Invention that is the property of the other party pursuant to Section 7.1 or 7.2, the inventing party shall notify the other party. Each of Vaccinex and Catalent shall, and does hereby, assign, and shall cause its Affiliates, employees, consultants and agents to so assign with full title guarantee, to the other party, without additional compensation, such right, title and interest in and to any Intellectual Property (including Inventions) as is necessary to fully effect the ownership provisions set out in Sections 7.1 and 7.2, and any accrued rights of action in respect thereof. Each of Vaccinex and Catalent shall, if so requested by the other party, execute all such documents and do all such other acts and things as may be reasonably required to comply with this Section 7.3 to vest in the appropriate party all rights in the relevant Intellectual Property and shall procure execution by any named inventor of all such documents as may reasonably be required by the other party in connection with any related patent application.

7.4 Patentable Inventions. In case any Inventions are patentable:

A. the party owning such Invention pursuant to Sections 7.1 and 7.2 shall have the right, in its sole discretion, to determine the patent strategy for such Invention, which may include not obtaining patent protection in a particular country or any country;

B. the party owning such Invention shall notify the other party in writing at least [***] prior to filing any patent application covering such Invention;

C. without prejudice to the generality of Section 7.3, the party not owning an Invention shall cooperate with the other party and/or its attorneys upon reasonable request, at the expense of the other party, in (i) properly filing and prosecuting patent applications, (ii) vesting title herein provided and (iii) providing non-financial assistance in enforcing any patents resulting from such patent applications; and

D. the cost of patenting Inventions will be borne by the owner of the Invention.

7.5 Limited Research License to Vaccinex.

A. For each Production Cell Line, within [***] of Vaccinex's written request, Catalent shall grant Vaccinex (or its designee, subject to the last sentence of this Section 7.5(A)) access to, and deliver to Vaccinex, a research cell bank relating to such Production Cell Line solely for non-cGMP use and/or internal evaluation use by Vaccinex or its Affiliates (each, a "**Research License**"). The [***] of such Research License shall be at [***] to Vaccinex, and thereafter, Vaccinex shall pay in advance an [***] license fee in consideration of each Research License equal to $[***], payable upon the [***] and thereafter upon [***]. Vaccinex shall continue to pay the [***] fee until the earlier of the following events: (i) Vaccinex makes its first milestone pursuant to a Cell Line Sale Agreement, (ii) Vaccinex notifies Catalent that it no longer desires access to the research cell bank or (iii) this Agreement is terminated by either Party. In any such event, Vaccinex will immediately destroy all research cells in its possession, document such destruction and send notice to Catalent that all cells have been destroyed. If such destruction occurs prior to the end of any annual Research License term, Vaccinex shall be entitled to a prorated credit towards other services from Catalent's Middleton Facility (for example, [***]). In no event shall any research cells containing GPEx Technology (including expression cassettes) (x) be transferred to any entity that is not an Affiliate of Vaccinex without obtaining prior consent from Catalent or (y) used for any cGMP activity (including the creation of a master cell bank).

B. Catalent hereby grants to Vaccinex during the Term a non-exclusive, world-wide, fully paid-up, royalty-free license under and to all Process Inventions owned by Catalent pursuant to the terms of Section 7.2 (excluding any Invention which is an improvement to, is based upon, or would require the use of the GPEx Technology to practice) solely as necessary for Vaccinex to develop, conduct clinical trials for, formulate, manufacture, test, and seek regulatory approval for the sale of the Drug Substance and any Drug Product.

7.6 Cell Line Sale Agreement. At the request of Vaccinex at any time from time to time during the Term and within [***] following the expiration or termination of this Agreement for any reason, Catalent shall sell Production Cell Line(s) to Vaccinex (and/or a designee reasonably acceptable to Catalent) pursuant to a Cell Line Sale Agreement for manufacture of the Drug Product (and no other product). As part of such agreement, Catalent shall also transfer to Vaccinex (or the purchasing designee as set forth above) the information necessary to use such Production Cell Line(s) to produce Expression Product and Drug Substance. The financial terms for the Cell Line Sale Agreement shall be based on the LOI provided that Phase A1 of Services for such Drug Product was scheduled to commence prior to December 31, 2009 pursuant to an executed SOW. All other terms and conditions of such sale and transfer will be negotiated in good faith by the parties, without unreasonable delay. For avoidance of doubt, Vaccinex shall not be required to execute a Cell Line Sale Agreement if Vaccinex is using the Production Cell Line solely for non-cGMP and/or internal evaluation use, in which case Section 7.5 shall govern.

ARTICLE 8
REPRESENTATIONS AND WARRANTIES

8.1 Catalent. Catalent represents, warrants and undertakes to Vaccinex that, unless otherwise agreed to by the parties in the SOW:

A. Catalent shall perform all Services in accordance with the SOW and all Applicable Laws;

B. when Manufacturing and/or Fill Finishing Drug Substance or Drug Product, at the time of tender of delivery by Catalent as provided in Section 2.10, Drug Substance and/or Drug Product shall have been Manufactured and/or Fill Finished (as applicable) in accordance with Applicable Laws and in conformance with Specifications, and shall not be adulterated, misbranded or mislabeled within the meaning of Applicable Laws, *provided*, that Catalent shall not be liable for defects to the extent directly attributable to Vaccinex-supplied Materials (including artwork, packaging and labeling), which were properly used by Catalent;

C. Catalent is free to supply to Vaccinex the Catalent Confidential Information and all other information to be supplied by Catalent to Vaccinex under this Agreement, and, Catalent has the legal right to grant Vaccinex the rights set forth in Section 7 of this Agreement;

D. without having made any investigation or search solely for the purposes of this representation, to the best of Catalent's knowledge, the use by Catalent of Catalent Intellectual Property in accordance with the terms of this Agreement and in performance of the Services hereunder (including its use in the Manufacture of the Drug Substance and/or Drug Product, but excluding the Drug Substance and/or Drug Product itself), do not and will not infringe any intellectual property rights or industrial property rights of any third party and do not involve the wrongful use of any trade secret or confidential information;

E. Catalent owns or lawfully controls the Facility, and has sufficient facilities and equipment, as well as a sufficient number of employees with such expertise and experience, as is necessary or appropriate to perform the Services in accordance with the terms hereof;

F. the Facility, and all the processes used in producing Expression Product, Drug Substance and/or Drug Product and performing the Services, shall be in accordance with cGMP, if applicable;

G. Catalent has the corporate power and authority and the legal right to enter into this Agreement and to perform its obligations hereunder; and

H. Catalent has taken all necessary corporate action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder. This Agreement has been duly executed and delivered on behalf of Catalent, and constitutes a legal, valid, binding obligation, enforceable against Catalent in accordance with its terms.

8.2 Vaccinex. Vaccinex represents, warrants and undertakes to Catalent that:

A. the Vaccinex-supplied Materials shall have been produced in compliance with the Applicable Laws, shall comply with all applicable specifications, and shall not be adulterated, misbranded or mislabeled within the meaning of Applicable Laws;

B. no specific safe handling instructions, health and environmental information and material safety data sheets are applicable to Drug Substance, Drug Product or any Vaccinex-supplied Materials, except as provided to Catalent in writing by Vaccinex prior to the parties' execution of the relevant SOW;

C. Vaccinex has all necessary authority to use and to permit Catalent to use pursuant to this Agreement all Vaccinex Intellectual Property related to the Services, Drug Substance, Drug Product; or Vaccinex-supplied Materials; and without having made any investigation or search solely for the purposes of this representation, to the best of its knowledge, there are no patents, trade secrets or other Intellectual Property rights of any third parties related to the Drug Substance, Drug Product, or Vaccinex-supplied Materials that would be infringed or misused by Catalent's performance of this Agreement in compliance with the SOWs;

D. Vaccinex shall use, hold and dispose of the results, data, samples and other materials and deliverables provided to it by Catalent pursuant to each SOW in compliance with all applicable laws, including Applicable Laws (including, in connection with any such items that are not labeled, 21 CFR § 201.150); specifically, Vaccinex shall not permit the human consumption of any such items, except to the extent such consumption occurs in the course of clinical studies that expressly permit such use and that have been approved by appropriate governmental authorities;

E. Vaccinex has the corporate power and authority and the legal right to enter into this Agreement and to perform its obligations hereunder; and

F. Vaccinex has taken all necessary corporate action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder. This Agreement has been duly executed and delivered on behalf of Vaccinex, and constitutes a legal, valid, binding obligation, enforceable against Vaccinex in accordance with its terms.

8.3 Limitations. THE REPRESENTATIONS AND WARRANTIES SET FORTH IN THIS ARTICLE 8 ARE THE SOLE AND EXCLUSIVE REPRESENTATIONS AND WARRANTIES MADE BY EACH PARTY TO THE OTHER PARTY AND NEITHER PARTY MAKES ANY OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES OF ANY KIND WHATSOEVER, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE.

ARTICLE 9
INDEMNIFICATION

9.1 Indemnification by Catalent. Catalent shall indemnify and hold harmless Vaccinex, its Affiliates, and their respective directors, officers, employees and agents ("**Vaccinex Indemnitees**") from and against any and all suits, claims, losses, demands, liabilities, damages, costs and expenses (including reasonable attorneys' fees and reasonable investigative costs) in connection with any suit, demand or action by any third party ("**Losses**") arising out of or resulting from (A) any breach of its representations, warranties or obligations set forth in this Agreement or (B) any negligence or willful misconduct by Catalent; in each case except to the extent that any of the foregoing arises out of or results from any Vaccinex Indemnitee's negligence, willful misconduct or breach of this Agreement.

9.2 Indemnification by Vaccinex. Vaccinex shall indemnify and hold harmless Catalent, its Affiliates, and their respective directors, officers, employees and agents ("**Catalent Indemnitees**") from and against any and all Losses arising out of or resulting from (A) any breach of its representations, warranties or obligations set forth in this Agreement, (B) any manufacture, packaging, sale, promotion, distribution by or on behalf of Vaccinex of, or use or exposure to, the Drug Product or any Vaccinex-supplied Materials, including product liability or strict liability, (C) Vaccinex's exercise of control over the SOW to the extent that Vaccinex's specific instructions or directions violate Applicable Laws and Catalent had no previous or independent knowledge of such violation, (D) the conduct of any clinical trials by Vaccinex utilizing any material or Drug Product which is the subject of this Agreement or any SOW, (E) any actual or alleged infringement or violation of any third party patent, trade secret, copyright, trademark or other proprietary rights by Intellectual Property or other information created or provided by Vaccinex, including Vaccinex-supplied Materials, or (F) any negligence or willful misconduct by Vaccinex; in each case except to the extent that any of the foregoing arises out of or results from any Catalent Indemnitee's negligence, willful misconduct or breach of this Agreement.

9.3 [***]. Notwithstanding Sections 9.1, 9.2, or any other provision of this Agreement, neither party shall have any obligation to indemnify the other in respect of any claim under or relating to [***].

9.4 Indemnification Procedures. All indemnification obligations in this Agreement are conditioned upon the party seeking indemnification (A) promptly notifying the indemnifying party of any claim or liability of which the party seeking indemnification becomes aware (including a copy of any related complaint, summons, notice or other instrument); *provided*, that failure to provide such notice within a reasonable period of time shall not relieve the indemnifying party of any of its obligations hereunder except to the extent the indemnifying party is prejudiced by such failure, (B) allowing the indemnifying party, if the indemnifying party so requests, to conduct and control the defense of any such claim or liability and any related settlement negotiations (at the indemnifying party's expense), (C) cooperating with the indemnifying party in the defense of any such claim or liability and any related settlement negotiations (at the indemnifying party's expense) and (D) not compromising or settling any claim or liability without prior written consent of the indemnifying party.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

ARTICLE 10
LIMITATIONS OF LIABILITY

10.1 EXCEPT IN THE EVENT OF [***], CATALENT SHALL HAVE NO LIABILITY UNDER THIS AGREEMENT FOR [***].

10.2 EXCEPT IN THE EVENT OF [***], CATALENT'S TOTAL LIABILITY UNDER THIS AGREEMENT SHALL IN NO EVENT EXCEED [***].

10.3 NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY FOR INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OR LOSS OF REVENUES, PROFITS OR. DATA ARISING OUT OF PERFORMANCE UNDER THIS AGREEMENT, WHETHER IN CONTRACT OR IN TORT, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

ARTICLE 11
INSURANCE

11.1 Catalent Insurance. Catalent shall, at its own cost and expense, obtain and maintain in full force and effect the following insurance during the Term: (A) Commercial General Liability Insurance with a per-occurrence limit of not less than $[***]; (B) Products and Completed Operations Liability Insurance with a per-occurrence limit of not less than $[***]; (C) Workers Compensation and Employers Liability Insurance, with statutory limits for Workers Compensation and Employers Liability limits of not less than $[***] per accident; and (D) Professional Services Errors & Omissions Liability Insurance with per-claim and aggregate limits of not less than $[***]. The parties hereby acknowledge and agree that Catalent may self-insure all or any portion of the required insurance. In the event that any of the required policies of insurance are written on a claims made basis, then such policies shall be maintained during the entire Term and for a period of not less than [***] following the expiration or termination of this Agreement. Catalent shall furnish to Vaccinex a certificate of insurance or other evidence of the required insurance as soon as practicable after the Effective Date and within [***] after renewal of such policies. Each insurance policy which is required under this Agreement, other than self-insurance, shall be obtained from an insurance carrier with an A.M. Best rating of at least A- VII.

11.2 Vaccinex Insurance. Vaccinex shall, at its own cost and expense, obtain and maintain in full force and effect the following insurance during the Term: (A) Commercial General Liability Insurance with a per occurrence limit of not less than an amount equivalent to $[***]; (B) Products and Completed Operations Liability Insurance (including coverage for Drug Products used in clinical trials, as applicable) with a per occurrence limit of not less than an amount equivalent to $[***]; and (C) Workers Compensation and Employers Liability Insurance with statutory limits for Workers Compensation and Employers Liability limits of not less than an amount equivalent to $[***] per accident. The parties hereby acknowledge and agree that Vaccinex may self-insure all or any portion of the above-required

insurance. In the event that any of the required policies of insurance are written on a claims made basis, then such policies shall be maintained during the entire Term and for a period of not less than [***] following the expiration or termination of this Agreement. Vaccinex shall furnish certificates of insurance evidencing the required insurance policies to Catalent upon request as soon as practicable after the Effective Date and within [***] after renewal of such policies. Each insurance policy which is required under this Agreement, other than self-insurance, shall be obtained from an insurance carrier with an A.M. Best rating of at least A- VII.

ARTICLE 12
TERM AND TERMINATION

12.1 Term. This Agreement shall commence on the Effective Date and shall continue for a period equal to the longer of 3 years or the expiration or termination of all the SOWs, unless earlier terminated in accordance with Section Article 12 (as may be extended in accordance with this Section, the "Term"). The Term shall automatically be extended for successive 1-year periods unless and until one party gives the other party at least [***] prior written notice of its desire to terminate as of the end of the then-current Term; *provided*, that as long as any SOW is in effect, the terms of this Agreement shall remain in effect.

12.2 Termination by Vaccinex Without Cause. Vaccinex may terminate this Agreement (in its entirety, including all SOWs) or any SOW without cause at any time during the Term of the Agreement on [***] prior written notice to Catalent. Upon receipt by Catalent of any such termination notice, Catalent will promptly cease or wind down, as appropriate, work under the terminated SOW(s) unless otherwise requested by Vaccinex in such notice.

12.3 Mutual Termination Rights. Either party may terminate this Agreement immediately without further action if (A) the other party files a petition in bankruptcy, or enters into an agreement with its creditors, or applies for or consents to the appointment of a receiver, administrative receiver, trustee or administrator, makes an assignment for the benefit of creditors, or suffers or permits the entry of any order adjudicating it to be bankrupt or insolvent and such order is not discharged within [***] or takes any equivalent or similar action in consequence of debt in any jurisdiction; or (B) the other party materially breaches any of the provisions of this Agreement, and such breach is not cured within [***] after the giving of written notice requiring the breach to be remedied; *provided*, that in the case of a failure of Vaccinex to make payments properly invoiced in accordance with the terms of this Agreement, Catalent may terminate this Agreement if such payment breach is not cured (or disputed in good faith) within [***] of receipt of notice of non-payment from Catalent.

12.4 Other Termination Rights. This Agreement may be terminated in accordance with Section 5.2.

12.5 Effect of Termination. Expiration or termination of this Agreement shall be without prejudice to any rights or obligations that accrued to the benefit of either party prior to such expiration or termination. In the event that this Agreement or any SOW is terminated, to the extent related to the terminated Agreement or SOW(s): (A) Vaccinex will pay for all Services performed up to the effective date of termination and/or Catalent will refund all monies (including advance retainers) not earned for Services rendered up to the effective date of termination; (B) the parties will cooperate to effect an orderly, efficient, effective and expeditious termination of all Catalent's activities applicable to the terminated Agreement or SOW(s); (C) Catalent shall use reasonable efforts to mitigate and cancel, to the extent possible, all obligations that would incur expense, and Catalent, shall not, without Vaccinex's approval,

perform any other additional Services applicable to the terminated Agreement or SOW(s), incur any other expenses, or enter into any other obligations related to the Services applicable to the terminated Agreement or SOW(s); (D) Vaccinex shall pay Catalent any applicable cancellation fees pursuant to Section 3.1(F) and shall reimburse Catalent for all cost and expenses incurred, and all noncancellable commitments made in the performance of the Services, including any costs to wind down and cease any ongoing Services; (E) Catalent will have no further obligation to perform any Services applicable to the terminated Agreement or SOW(s) after the effective date of termination; and (F) Vaccinex will have no further obligation to pay for any Services applicable to the terminated Agreement or SOW(s) performed after the effective date of termination. Further to clause (A), if payments under the terminated Agreement or SOW(s) are unit or milestone-based, and the applicable phase is terminated after costs have been incurred by Catalent toward achieving portions of one or more units or milestones, but that unit or milestone has not yet been completed, Vaccinex shall pay Catalent's standard fees for actual work performed toward those incomplete units or milestones up to the effective date of termination applicable to the terminated Agreement or SOW(s) (which payment shall not exceed the amount of the payment due upon completing that milestone), in addition to paying for completed units or milestones. The parties shall comply with all other obligations set forth in this Agreement relating to return or disposal of materials and information, including Sections 2.12(B), 6.5 and 6.6.

12.6 Survival. The rights and obligations of the parties shall continue under Articles 6 (Confidentiality), 7 (Intellectual Property), 9 (Indemnification), 10 (Limitations of Liability), 11 (Insurance), 13 (Notice), 14 (Miscellaneous); and under Sections 2.9 (Error), 2.11 (Failure to Take Delivery), 2.12 (Samples and Excess Materials), 3.1(F) (Cancellations and Postponements), 3.3 (Payment Terms), 3.5 (Taxes), 4.1 (Non-Conforming Drug Substance or Drug Product), 4.2 (Discrepant Results), 4.3 (Supply of Vaccinex-Supplied Materials in Defective Drug Product), 5.3 (Record Retention), 8.3 (Limitations), 12.5 (Effect of Termination) and 12.6 (Survival); in each case in accordance with their respective terms if applicable, notwithstanding expiration or termination of this Agreement.

ARTICLE 13
NOTICE

All notices and other communications hereunder shall be in writing and shall be deemed given: (A) when delivered personally; (B) when delivered by facsimile transmission or email (receipt verified); (C) when received or refused, if mailed by registered or certified mail (return receipt requested), postage prepaid; or (D) when delivered if sent by express courier service, to the parties at the following addresses (or at such other address for a party as shall be specified by like notice; *provided*, that notices of a change of address shall be effective only upon receipt thereof):

To Vaccinex:	Vaccinex, Inc. 1895 Mt. Hope Avenue, Rochester, NY 14620 Attn: Raymond Watkins Facsimile: [***] Email: [***]
With a copy to:	Adkins, Plant, Elvins & Black, PLLC 4616 25th Avenue NE, #725 Seattle, WA 98105 Attn: Joanna Black, Facsimile: [***] Email: [***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

To Catalent:	Catalent Pharma Solutions, LLC 8137 Forsythia Street Middleton, WI 53562 Attn: VP / GM Facsimile: [***] Email: [***]
With a copy to:	Catalent Pharma Solutions, LLC 14 Schoolhouse Road Somerset, NJ 08873 Attn: General Counsel (Legal Department) Facsimile: [***] Email:

ARTICLE 14
MISCELLANEOUS

14.1 Entire Agreement; Amendments. This Agreement, including the LOI, SOWs and any other Attachments, the MTA, any Quality Agreements executed hereunder, and any Change Orders or other amendments to any of the foregoing, constitutes the entire understanding between the parties and supersedes any contracts, agreements or understandings (oral or written) of the parties with respect to the subject matter hereof. No term of this Agreement may be amended except upon written agreement of both parties, unless otherwise expressly provided in this Agreement.

14.2 Captions; Certain Conventions. The captions in this Agreement are for convenience only and are not to be interpreted or construed as a substantive part of this Agreement. Unless otherwise expressly provided herein or the context of this Agreement otherwise requires, (A) words of any gender include each other gender, (B) words such as “herein,” “hereof” and “hereunder” refer to this Agreement as a whole and not merely to the particular provision in which such words appear, (C) words using the singular shall include the plural, and vice versa, (D) the words “include(s)” and “including” shall be deemed to be followed by the phrase “but not limited to,” “without limitation” or words of similar import, (E) the word “or” shall be deemed to include the word “and” (e.g. “and/or”) and (F) references to “Article,” “Section,” “subsection,” “clause” or other subdivision, or to an Attachment or other appendix, without reference to a document are to the specified provision or Attachment of this Agreement. This Agreement shall be construed as if it were drafted jointly by the parties.

14.3 Further Assurances. The parties agree to execute, acknowledge and deliver such further instruments and to take all such other incidental acts as may be reasonably necessary or appropriate to carry out the purpose and intent of this Agreement.

14.4 No Waiver. Failure by either party to insist upon strict compliance with any term of this Agreement in any one or more instances will not be deemed to be a waiver of its rights to insist upon such strict compliance with respect to any subsequent failure.

14.5 Severability. If any term of this Agreement is declared invalid or unenforceable by a court or other body of competent jurisdiction, the remaining terms of this Agreement will continue in full force and effect.

14.6 Independent Contractors. The relationship of the parties is that of independent contractors, and neither party will incur any debts or make any commitments for the other party except to the extent expressly provided in this Agreement. Nothing in this Agreement is intended to create or will be construed as creating between the parties the relationship of joint ventures, co-partners, employer/employee or principal and agent. Neither party shall have any responsibility for the hiring, termination or compensation of the other party's employees or contractors or for any employee benefits of any such employee or contractor.

14.7 Successors and Assigns. This Agreement will be binding upon and inure to the benefit of the parties, their successors and permitted assigns. Neither party may assign this Agreement, in whole or in part, without the prior written consent of the other party, except that either party may, without the other party's consent, assign this Agreement to an Affiliate or to a successor to substantially all of the business or assets of the assigning party or the assigning party's business unit responsible for performance under this Agreement.

14.8 No Third Party Beneficiaries. This Agreement shall not confer any rights or remedies upon any person or entity other than the parties named herein and their respective successors and permitted assigns.

14.9 Governing Law. This Agreement shall be governed by and construed under the laws of the State of New York, USA, excluding its conflicts of law provisions. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement.

14.10 Alternative Dispute Resolution. If any dispute arises between the parties in connection with this Agreement, such dispute shall be presented to the respective presidents or senior executives of Catalent and Vaccinex for their consideration and resolution. If such parties cannot reach a resolution of the dispute, then such dispute shall be resolved by binding alternative dispute resolution in accordance with the then existing commercial arbitration rules of CPR Institute for Dispute Resolution, 366 Madison Avenue, New York, NY 10017. Arbitration shall be conducted in the jurisdiction of the defendant party.

14.11 Prevailing Party. In any dispute resolution proceeding between the parties in connection with this Agreement, the prevailing party will be entitled to recover its reasonable attorney's fees and costs in such proceeding from the other party.

14.12 Publicity. Neither party will make any press release or other public disclosure regarding this Agreement or the transactions contemplated hereby without the other party's express prior written consent, except as required under Applicable Laws or by any governmental agency or by the rules of any stock exchange on which the securities of the disclosing party are listed, in which case the party required to make the press release or public disclosure shall use commercially reasonable efforts to obtain the approval of the other party as to the form, nature and extent of the press release or public disclosure prior

to issuing the press release or making the public disclosure. In addition, Vaccinex shall not use Catalent's name in a manner that could be construed as an endorsement of Vaccinex's Drug Product, including any scientific conclusion as to safety or efficacy.

14.13 Force Majeure. Neither party shall be liable in damages for, nor shall this Agreement be terminable or cancelable by reason of, any delay or default in such party's performance hereunder if such default or delay is caused by events beyond such party's reasonable control, including acts of God, law or regulation or other action or failure to act of any government or agency thereof, war or insurrection, civil commotion, destruction of production facilities or materials by earthquake, fire, flood or weather, labor disturbances, epidemic or failure of suppliers, public utilities or common carriers; provided, that the party seeking relief under this Section shall immediately notify the other party of such cause(s) beyond such party's reasonable control. The party that may invoke this Section shall use commercially reasonable efforts to reinstate its ongoing obligations to the other party as soon as practicable. If the cause(s) shall continue unabated for [***], then both parties shall meet to discuss and negotiate in good faith what modifications to this Agreement should result from such cause(s).

14.14 Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed an original but all of which together will constitute one and the same instrument. Any photocopy, facsimile or electronic reproduction of the executed Agreement shall constitute an original.

[*Signature page follows*]

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IN WITNESS WHEREOF, the parties have caused their respective duly authorized representatives to execute this Agreement effective as of the Effective Date.

CATALENT PHARMA SOLUTIONS, LLC		**VACCINEX, INC.**	
By:	/s/ Michael E. Jenkins, Ph.D.	By:	/s/ Maurice Zauderer, Ph.D.
Name:	Michael E. Jenkins, Ph.D.	Name:	Maurice Zauderer, Ph.D.
Its:	General Manager	Its:	President & Chief Executive Officer

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

ATTACHMENT A

STATEMENTS OF WORK

To be executed from time to time by the parties and attached hereto.

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ATTACHMENT B

FORM OF QUALITY AGREEMENT

See attached.

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QUALITY AGREEMENT

This Quality Agreement dated as of 30 June 2009, defines the duties of Catalent Pharma Solutions, LLC ("**Catalent**") and Vaccinex Inc. ("**Customer**") for any contract pharmaceutical manufacturing requested by Customer after the Effective Date. In particular this Quality Agreement states who is responsible for the GMP (defined below) aspects of pharmaceutical manufacturing, testing and release of the Cell Bank (as defined below) and Bulk Drug Substance ("**Processing**") and specifies the way in which the party releasing these ensures that the Cell Bank and Bulk Drug Substance comply with the approved Specifications (defined below).

This Quality Agreement takes the form of a detailed checklist of all the activities associated with the Processing. Responsibility for each activity is assigned to either Catalent or Customer in the appropriate box in the Delegation Responsibility Checklist that follows.

This Agreement is subject to the terms of the Materials Transfer Agreement (MTA) executed between Vaccinex and Catalent and until after the Development, Manufacturing Agreement (DMA) is executed at such time it will be incorporated into such DMA as an exhibit thereto. In addition, this Quality Agreement shall govern all quality-related matters for services to be provided by Catalent in any Scope of Work that may be executed between the parties ("**SOW**"), both prior to the execution of the DMA and thereafter. In the event of a conflict between this Quality Agreement and the DMA, (or SOW, as applicable), the Quality Agreement shall control for quality-related matters and the DMA (or MTA, as applicable) shall control for commercial matters, including allocation of risk, liability and financial responsibility.

Catalent will perform the activities defined herein in accordance with Standard Operating Procedures and all Applicable Laws (defined below), to the extent that a Standard Operating Procedure is applicable to such activity. In the event of a conflict between the terms of this Quality Agreement and a Standard Operating Procedure, the DMA shall govern dispute resolution.

This Quality Agreement is intended to comply with the guidance and directives set forth in (i) FDA Guidance for Industry, Cooperative Manufacturing Arrangements for Licensed Biologics, November 2008, and (ii) Commission Directive Commission Directive 2003/94/EC of 8 October 2003 laying down the principles and guidelines of good manufacturing practice for medicinal products intended for human use.

Vaccinex, Inc. 1895 Mt. Hope Ave. Rochester, NY 14620	Catalent Pharma Solutions, LLC 8137 Forsythia Street Middleton, WI 53562 USA
Position: _____	Position: _____
Name: _____	Name: _____
Signature: _____	Signature: _____
Date: _____	Date: _____

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

For purposes of this Quality Agreement, the following definitions shall apply:

A. "**Bulk Drug Substance**" means purified protein suitable for further processing into a Drug Product in accordance with the Specifications.

B. "**Cell Bank**" means an aliquot of a single pool of cells which generally has been prepared from the selected cell clone under defined conditions, dispensed into multiple containers and stored under defined conditions.

C. "**Applicable Laws**" means all laws, ordinances, rules and regulations of the Territory applicable to the Processing of the Bulk Drug Substance in accordance with the Specifications and the Statement of Work, or any aspect thereof, and the obligations of Catalent or Customer, as the context requires, including, without limitation, (i) all applicable federal, state and local laws and regulations of each Territory; (ii) the U.S. Federal Food, Drug and Cosmetic Act, and (iii) GMPs.

D. "**Facility**" means the following Catalent facility:

Manufacturing & Testing:

8137 Forsythia St.
Middleton, WI 53562

E. "**FDA**" means the United States Food and Drug Administration, and any successor entity thereto.

F. "**For Cause Audit**" means an audit performed to investigate and resolve issues related to the quality or acceptability of released Bulk Drug Substance.

G. "**GMPs**" means the current Good Manufacturing Practices for Finished Pharmaceuticals promulgated by the FDA, as amended from time to time. GMPs shall also include good manufacturing practice regulations promulgated by a Regulatory Authority in a Territory other than the FDA solely to the extent Customer or its designee has provided written copies of such regulations to Catalent prior to Processing. Copies of all such regulations shall be in the English language.

H. "**Processing**" means pharmaceutical manufacturing, testing and release of the Cell Bank and Bulk Drug Substance.

I. "**Regulatory Authority**" means the international, federal, state or local governmental or regulatory bodies, agencies, departments, bureaus, courts or other entities in the United States (including the FDA) or other country in the Territory responsible for (A) the regulation (including pricing) of any aspect of pharmaceutical or medicinal products intended for human use or (B) health, safety or environmental matters generally.

J. "**Specifications**" means the procedures, requirements, standards, quality control testing, other data and services agreed between the parties in writing.

K. "**Standard Operating Procedures**" means the standard operating procedures in effect at Catalent that have been approved by Catalent's Quality Assurance department and that are applicable to Processing.

L. "**Territory**" means the United States of America and any other country that the parties agree in writing to add to this Quality Agreement from time to time.

RESPONSIBILITY DELEGATION CHECKLIST

For avoidance of doubt, to the extent that Catalent is assigned responsibility under this checklist for a particular task, Customer shall retain the right to audit Catalent's compliance with such task during the [***] audit.

		[***]	[***]
1.	**Regulatory Authorizations & GMP Compliance**		
1.1	Will maintain all licenses, registrations and other authorizations as are required to operate a GMP pharmaceutical manufacturing facility under the Applicable Laws.		[***]
1.2	Will maintain and operate [***] in compliance with the GMPs and all other Applicable Laws.		[***]
1.3	Will process the Bulk Drug Substance in accordance with the GMPs and all other Applicable Laws.		[***]
1.4	Is not debarred under the U.S. Generic Drug Enforcement Act of 1992 and does not employ or use the services of any individual or entity who is debarred or who has engaged in activities that could lead to being debarred.	[***]	[***]
2.	**Regulatory Actions & Inspections**		
2.1	Will promptly notify [***] (but no later than 24 hours following receipt of notice) of any FDA or other Regulatory Authority notice of inspection or inspection of [***] relating to the Bulk Drug Substance and permit [***] to participate in such inspection only related to [***]'s Bulk Drug Substance.		[***]
2.2	Will promptly notify the other party of any FDA or other Regulatory Authority investigation relating to the Bulk Drug Substance.	[***]	[***]
2.3	Will provide copies of any FDA Form 483's, Warning Letters or the like from Regulatory Authorities within [***] of receipt and subsequent response(s), in each case relating to the Bulk Drug Substance.	[***]	[***]
2.4	Will promptly notify the other party of any Regulatory Authority request for Bulk Drug Substance samples or Bulk Drug Substance batch records.	[***]	[***]
2.5	Will notify the other party of any requests for information, notices of violations or other communication from a Regulatory Authority relating to environmental, occupational health and safety compliance, relating directly to the Bulk Drug Substance.	[***]	[***]

		[***]	[***]
3.	**Materials**		
3.1	Will provide a Cell Bank meeting the Specifications and GMPs for manufacture, as well as a certificate of analysis.		[***]
3.2	Will provide Bulk Drug Substance meeting the Specifications and GMPs for manufacture, as well as a certificate of analysis.		[***]
3.3	Will be responsible for maintenance of Specifications, procurement, storage, sampling, testing and release of raw materials. Will make available to [***] all documentation related to the raw materials (CoA) used for manufacturing at [***]'s request.		[***]
3.4	Will audit and qualify raw material suppliers providing critical raw materials used in the Cell Bank or Bulk Drug Substance to ensure full compliance with GMPs and Applicable Laws.		[***]
3.5	Will store the Cell Bank, Bulk Drug Substance, and raw materials in accordance with the Specifications while at [***].		[***]
3.6	Will provide inventory levels of Cell Bank and Bulk Drug Substance periodically upon request by [***].		[***]
3.7	Will retain reference samples of raw materials for 1 year beyond date of expiration and store under appropriate conditions in accordance with the Specifications.		[***]
3.8	Will dispose of Bulk Drug Substance waste and any special waste related to the Processing of the Bulk Drug Substance		[***]
4.	**Production & Validations**		
4.1	Will be responsible for maintenance, qualifications and validation of [***] and equipment associated with Processing.		[***]
4.2	Will Process at [***] in accordance with the master batch record, the Standard Operating Procedures referenced therein, and the Specifications.		[***]
4.3	Will be responsible for labeling in accordance with the Specifications.		[***]
4.4	Will be responsible for packaging in accordance with the Specifications.		[***]
4.5	Will designate unique serial lot numbers for raw materials and part number for Bulk Drug Substance.		[***]
4.6	Will review and approve the batch records associated with Processing.	[***]	[***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

		[***]	[***]
5.	**Audits**		
5.1	Will be entitled to conduct one quality audit of [***] per calendar [***], which would permit [***] representatives access as reasonably required to conduct a cGMP compliance audit of [***].	[***]	
5.2	Will conduct internal audits, in accordance with the GMPs and applicable Standard Operating Procedures.		[***]
5.3	Will allow for cause audits.		[***]
5.4	Will provide a written response to all audit findings within 30 business days of receipt of the audit report from [***]. Response to include expected timeline for corrective action, where appropriate.		[***]
6.	**Lot Codes & Expiration Dating**		
6.1	Will provide date of manufacture on the batch label.		[***]
6.2	Will monitor the expiration dates for the Bulk Drug Substance batches, send samples for retesting to extend the expiration Dates and issue an updated Certificate of Analysis.	[***]	[***]
7.	**Samples**		
7.1	Will be responsible for Cell Bank sampling in accordance with GMPs and Applicable Laws and as otherwise agreed to by the parties in the specification for the Cell Bank.		[***]
7.2	Will be responsible for Bulk Drug Substance sampling in accordance with GMPs and Applicable Laws and as otherwise agreed to by the parties in the master batch record for the Bulk Drug Substance.		[***]
7.3	Will retain finished Bulk Drug Substance samples in accordance with Applicable Laws.		[***]
7.4	Will retain stability samples of finished Bulk Drug Substance in accordance with Applicable Laws.		[***]
8.	**Testing & Analysis**		
8.1	Will be responsible for sending samples of the Cell Bank for testing.		[***]
8.2	Will be responsible for sending samples of Bulk Drug Substance for testing and will be responsible for testing the Bulk Drug Substance.	[***]	[***]
8.3	Will qualify contract testing laboratories, for release testing, if any.		[***]

		[***]	[***]
8.4	Will establish and approve the Bulk Drug Substance Specification including contract testing laboratories utilized.	[***]	[***]
8.5	Will notify [***] and investigate all out-of-Specification test results ("**OOS**") originating at [***] and provide documentation to [***] relating to such investigations with the batch record applicable to the batch containing the OOS test result. The OOS report and any retest will be approved by the [***].	[***]	[***]
8.6	Will perform Bulk Drug Substance stability testing at [***]'s request according to Statement of Work, Specifications, stability protocol and Standard Operating Procedures.		[***]
8.7	Will promptly notify [***] of any recall and/or confirmed stability or other failure of Bulk Drug Substance that might be attributed to Processing.	[***]	
9.	**Release**		
9.1	Will release the Cell Bank upon demonstrated conformity with the Specification and successful completion of safety tests specified in ICH guidance Q5A *Viral Safety Evaluation of Biotechnology Products Derived from Cell Lines of Human or Animal Origin, as amended.*		[***]
9.2	Will release Bulk Drug Substance to [***] upon demonstrated conformity with the Specifications and successful completion of safety tests specified in ICH guidance Q5A *Viral Safety Evaluation of Biotechnology Products Derived from Cell Lines of Human or Animal Origin, as amended*.		[***]
10.	**Records**		
10.1	Will maintain a documented system for handling deviations, investigations, OOS results and corrective and preventative action (CAPA).		[***]
10.2	Will notify [***] as soon as possible but no more than three (3) business days of discovery of critical deviations / investigations in Processing for review, comment and approval.	[***]	[***]
10.3	Will maintain a formal change control system for evaluating all changes that may affect production and control of the Cell Bank or Bulk Drug Substance.		[***]
10.4	Will obtain [***] pre-approval of critical changes affecting Processing, Cell Bank, and Bulk Drug Substance, and provide corresponding documentation.		[***]

		[***]	[***]
10.5	Will provide the released batch record documentation for each Cell Bank and batch of Bulk Drug Substance, which shall include the following: • A statement that the lot was manufactured, packaged and tested in accordance with Specifications and cGMPs, identifies the master batch record documents, and • Executed batch record and all associated documentation including testing records, and • The signature of the QA Representative who released the batch		[***]
10.6	Will store the master record, batch records and all other documentation related to Cell Bank and Bulk Drug Substance for the minimum period required by all Applicable Laws.		[***]
10.7	Will provide copies of all documentation necessary for the other party to respond to inquiries by Regulatory Authorities.	[***]	[***]
11.	**Storage**		
11.1	Will store the Raw Materials at [***] in accordance with the Specifications until Processing.		[***]
11.2	Will store the Cell Bank in accordance with the Specifications and Standard Operating Procedures.		[***]
11.3	Will store the finished Bulk Drug Substance in accordance with the Specifications pending release of the Bulk Drug Substance.		[***]
11.4	Will ensure storage of Bulk Drug Substance in accordance with the Specifications following delivery of such Bulk Drug Substance to [***]'s authorized carrier.	[***]	
12.	**Safety**		
12.1	Will maintain safety/hazard and handling data on the Bulk Drug Substance.	[***]	
13.	**Complaints & Recalls**		
13.1	Will assist [***] in investigating and resolving all medical and non-medical Bulk Drug Substance complaints.		[***]
13.2	Will provide [***] with any information relating to the Processing that is necessary to address a Bulk Drug Substance complaint or adverse drug event.		[***]
13.3	Will investigate all complaints and adverse drug events associated with Bulk Drug Substance (or product containing same).	[***]	
13.4	Will issue all reports and follow up corrective action relating to complaints and adverse drug events associated with Bulk Drug Substance (or product containing same).	[***]	
13.5	Responsible for decision of withdrawal of Bulk Drug Substance (or product containing same) from a clinical study.	[***]	

		[***]	[***]
13.6	Responsible for notification of decision of withdrawal of bulk Drug Substance (or product containing same) to appropriate Regulatory Authority.	[***]	
14.	**Quality Agreement Review**		
14.1	Will review Quality Agreement at least once per year to assure still current and covers scope of current activities.	[***]	[***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

CONFIDENTIAL

GPEx®-DERIVED CELL LINE SALE AGREEMENT

This GPEx®-Derived Cell Line Sale Agreement (this "**Agreement**") is made as of this 13th day of January, 2010 ("**Effective Date**"), by and between Vaccinex, Inc., a Delaware corporation, with a place of business at 1895 Mt. Hope Avenue, Rochester, NY, 14620 ("**Client**"), and Catalent Pharma Solutions, LLC, a Delaware limited liability company, with a place of business at 14 Schoolhouse Road, Somerset, New Jersey 08873, USA ("**Catalent**").

RECITALS

A. Catalent and its Affiliates hold certain proprietary cell line engineering and gene expression technology for the expression of proteins ("**GPEx Technology**"), which proteins can be used in drug products;

B. Catalent has, pursuant to that certain Material Transfer and Evaluation Agreement dated February 20, 2007, as amended on August 8, 2008 and July 9, 2009 (collectively, the "**Project Document**"), developed for Client through the application of the GPEx Technology cell line (including any clonal cell lines derived in whole or in part therefrom, the "**GPEx Cell Line**") expressing the Expression Product(s) (as defined below); and

C. Vaccinex and Catalent have entered into that certain Letter of Intent to Contract with Catalent Pharma Solutions, LLC For Mammalian Cell Line Engineering Services dated June 29, 2009 (the "**Letter of Intent**"), setting forth certain pricing arrangements to apply if and when the parties execute appropriate relevant definitive agreements; and

D. Client wishes to purchase and Catalent is willing to sell the GPEx Cell Line on the terms and conditions set forth below.

THEREFORE, in consideration of the mutual covenants, terms and conditions set forth below, the parties agree as follows:

ARTICLE 1
DEFINITIONS

The following terms have the following meanings in this Agreement:

1.1 "**Active**" means any pharmaceutically active agent, whether chemical or biologic in nature.

1.2 "**Affiliate(s)**" means, with respect to Client or any third party, any corporation, firm, partnership or other entity that controls, is controlled by or is under common control with such entity; and with respect to Catalent, Catalent Pharma Solutions, Inc. ("Catalent Inc.") and any corporation, firm, partnership or other entity controlled by Catalent Inc. For the purposes of this definition, "**control**" shall mean the ownership of at least 50% of the voting share capital of an entity or any other comparable equity or ownership interest.

1.3 “**Agreement**” has the meaning set forth in the introductory paragraph, and includes all its Attachments and other appendices (all of which are incorporated herein by reference) and any amendments to any of the foregoing made as provided herein or therein.

1.4 [***].

1.5 “**Catalent**” has the meaning set forth in the introductory paragraph, or any successor or permitted assign. Catalent shall have the right to cause any of its Affiliates to perform any of its obligations hereunder, and Client shall accept such performance as if it were performance by Catalent.

1.6 “**Catalent Indemnitees**” has the meaning set forth in Section 6.2.

1.7 “**Client**” has the meaning set forth in the introductory paragraph, or any successor or permitted assign.

1.8 “**Client Indemnitees**” has the meaning set forth in Section 6.1.

1.9 “**Contract Manufacturer**” means a third party that derives more than fifty percent (50%) of its revenues from performing contract manufacturing services.

1.10 “**Combination Product**” means any product containing (A) an Active that constitutes at least one Product and (B) one or more other Actives that do not by themselves constitute a Product; whether the Actives described in the foregoing clauses (A) and (B) are combined into a single dose form, comprise more than one dose form packaged and sold together or comprise more than one dose form packaged separately but sold together.

1.11 “**Effective Date**” has the meaning set forth in the introductory paragraph.

1.12 “**Expression Product(s)**” means any [***] Attachment A and [***], including the Expression Products [***].

1.13 “**GPEx Cell Line**” has the meaning set forth in Recital B.

1.14 “**GPEx Technology**” has the meaning set forth in Recital A.

1.15 “**Launch**” means the first commercial sale of any Product by Client, its Affiliates, sublicensees or agents anywhere in the world after receipt of Regulatory Approval.

1.16 “**Net Sales**” means, for the measured period, the gross amounts invoiced by Client or its permitted licensees (including its Affiliates) for Products sold or commercially disposed of for value by Client or its permitted sublicensees (including its Affiliates less the following:

[***].

In addition, Net Sales shall include (i) the [***], whether in the form of upfront fees, milestone fees, royalties or otherwise.

Sales of Products between Client and its permitted sublicensees or subcontractors (including its Affiliates) shall be disregarded for the purposes of calculating Net Sales, and in such case Net Sales shall include only subsequent sales by the relevant sublicensee or subcontractor to a third party. Subject to the foregoing sentence, if any Products are sold or disposed of by Client or its permitted sublicensees other than in a bona fide arm’s length sale exclusively for money, then Net Sales for such products shall be deemed to be the price at which Client could have sold such Products in a separate arm’s length transaction to a willing purchaser at the relevant time in the relevant country. For purposes of this Agreement, for purposes of calculating Net Sales, a “sale” shall not include transfers or other distributions or dispositions of a Product (including Combination Products) for sample or testing purposes, research purposes, regulatory purposes, clinical trials, patient assistance programs, charitable purposes or to physicians or hospitals for promotional purposes for which Client receives no compensation.

The amount of any reduction or reversal of any accrual or reserve related to any deduction from the amount invoiced for Products shall be included in Net Sales in the quarter in which such reduction or reversal occurs. All calculations shall be made in accordance with GAAP.

In the case of a Combination Product for which each Active constituting a Product and each of the Actives not constituting Products have established market prices when sold separately, Net Sales shall be determined by multiplying the Net Sales for each such Combination Product by a fraction, the numerator of which shall be the established market price for the Products contained in the Combination Product and the denominator of which shall be the sum of the established market prices for the Products plus the other Actives contained in the Combination Product. When such separate market prices are not established, then the parties shall negotiate in good faith to determine a fair and equitable method of calculating Net Sales for the Combination Product in question. Notwithstanding the foregoing, in no event shall the [***].

1.17 “**Pricing Approval**” means subsequent to Regulatory Approval, pricing and any relevant reimbursement approval to allow marketing and sales of Product in the given country for which such Regulatory Approval relates.

1.18 “**Product**” means any product comprising or containing an Expression Product, but does not include the GPEx Cell Line itself.

1.19 "**Project Documents**" has the meaning set forth in Recital B.

1.20 "**Purpose**" has the meaning set forth in Section 2.1.

1.21 "**Regulatory Approval**" means any approvals, product and/or establishment licenses, registrations or authorizations, including approvals pursuant to U.S. Investigational New Drug ("**IND**") applications, Biologics License Applications ("**BLA**"), New Drug Applications and Abbreviated New Drug Applications, as applicable (or equivalent non-U.S. filings, such as European marketing authorization applications) of any Regulatory Authorities that are necessary for the development, manufacture, use, storage, exportation, importation, transport, promotion, marketing, distribution or sale of Products anywhere in the world, excluding Pricing Approvals.

1.22 "**Regulatory Authorities**" means the international, federal (including the FDA), state or local governmental or regulatory bodies, agencies, departments, bureaus, courts or other entities in any jurisdiction in the world responsible for (A) the regulation (including pricing) of pharmaceutical or medicinal products intended for human use or (B) health, safety or environmental matters generally.

1.23 "**Term**" has the meaning set forth in Section 9.1.

ARTICLE 2
SALE AND USE OF CELL LINE

2.1 Contingent Sale. Catalent hereby sells and transfers to Client the GPEx Cell Line; *provided*, that Client shall use the GPEx Cell Line solely for developing, testing, seeking Regulatory Approvals, including pursuant to an IND (or equivalent non-U.S. filings), for, marketing, and otherwise commercially exploiting Product(s) (the "**Purpose**"). Such sale is and shall remain contingent upon the continued observance by Client of the terms of this Agreement.

2.2 No License. The sale of the GPEx Cell Line to Client shall not be construed as a license or as permission to (A) independently make or utilize the GPEx Technology or (B) modify or derive portions of the GPEx Cell Line for the development of products other than the Products.

2.3 Tender of GPEx Cell Line. Upon payment of the fee described in Section 3.1(A)(i) by Client to Catalent, Catalent shall make the GPEx Cell Line available to Client EXW (Incoterms 2000) the Catalent site, as follows: within [***] following such payment, Catalent shall tender [***] of the GPEx Cell Line (representing approximately [***] of the agreed quantity) to Client's designated common carrier; and within [***] following such payment, Catalent shall tender the balance. Title to and risk in the GPEx Cell Line shall pass to [***] when [***]. Catalent shall retain a limited amount of the GPEx Cell Line for [***] following tender of delivery of the second shipment solely as safety stock; and thereafter shall be entitled to destroy such safety stock, unless Client requests Catalent maintain such safety stock, at Client's expense.

2.4 Client Handling. Client shall comply with all applicable laws and regulations, as well as all published governmental guidelines, pertaining to the use, storage, transportation, disposition, containment and other handling of the GPEx Cell Line and all Products. In particular, Client acknowledges that the manufacture, transfer, sale and/or export of the GPEx Cell Line or any Product may require a license or approval from an agency of the United States government. Client shall be solely responsible for obtaining all licenses, permits or authorizations required from the United States and any other government for any manufacture, transfer, sale and/or use of the GPEx Cell Line and any Product, including Regulatory Approvals. To the extent not inconsistent with this Agreement, Catalent agrees to provide Client (at Client's expense) with such assistance as Client may reasonably request in obtaining such licenses, permits, or authorizations. Such services shall be provided in accordance with a separate service agreement to be agreed upon by the parties.

2.5 Regulatory Authority Submissions. Client and Catalent agree to cooperate in preparing and making any required submissions to any Regulatory Authority in respect of the GPEx Cell Line or Products, including Regulatory Approvals; provided, that Catalent shall not be required to incur any material expense, whether internal or out-of-pocket, in connection therewith, unless otherwise expressly agreed in writing by Catalent in advance. Catalent expressly agrees that Client shall have the right to reference any drug master files maintained by Catalent in the ordinary course of business relating to any Product or GPEx Technology covered by this Agreement insofar as such information is necessary or desirable in connection with obtaining any Regulatory Approval.

2.6 Further Sale or Transfer of GPEx Cell Line. Subject in all cases to the Purpose:

A. To a Purchaser. Client shall have the right to sell, license or transfer its rights to the GPEx Cell Line to any third party, including its Affiliates; *provided*, that (i) Client provides written notice of such proposed sale, license or transfer to Catalent at least [***] in advance and (ii) such third party agrees in a writing reasonably acceptable to Catalent to assume Client's obligations under this Agreement, including obligations to make all deferred payments pursuant to Section 3.1. Notwithstanding any such further sale or transfer, Client shall remain liable for non-payment of all such deferred payments.

B. To a Contract Manufacturer. Client shall have the right to transfer the GPEx Cell Line to a Contract Manufacturer; *provided*, that such party agrees in advance in a writing reasonably acceptable to Catalent not to transfer or make available the GPEx Cell Line or any Product to any party other than Client or Client's designated recipients.

ARTICLE 3
PAYMENT

3.1 Fees. In consideration for the GPEx Cell Line, provided that Section 3.2 does not apply, if Client has contracted a Contract Manufacturer to produce the applicable Product pursuant to Section 2.6(B), then:

A. Milestone Payments. Client shall pay to Catalent the following milestone fees:

[***]

B. Contingent Sale Fee. Client shall pay to Catalent, on a calendar quarterly basis, a contingent sale fee equal to [***]% of Net Sales [***].

3.2 Fees. In consideration for the GPEx Cell Line, if Vaccinex, its permitted licensees (other than Contract Manufacturers) or Affiliates, owns or operates the facility that is producing the applicable Product:

A. Milestone Payments. Client shall pay to Catalent the following milestone fees:

[***]

B. Contingent Sale Fee. Client shall pay to Catalent, on a [***] basis, a contingent sale fee equal to [***]% of Net Sales [***].

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

3.3 Annual Maintenance Fees. Client shall pay Catalent an annual fee for Product maintenance services in the amount of [***] dollars ($[***]) per year. Such fees shall be paid within [***] following invoice, which invoice shall be submitted to Client by Catalent upon each anniversary of the Effective Date during the Term, beginning on the first anniversary of the Effective Date.

3.4 Payment Terms. Client shall notify Catalent of the achievement of each milestone set forth in Section 3.1 or 3.2 within [***] following achievement. Such fees shall be paid within [***] following invoice, as directed in the applicable invoice, which invoice shall be submitted to Client by Catalent not later than promptly following receipt of Client's notification, and shall be non-refundable and non-creditable. For avoidance of doubt, the corresponding payments in Section 3.1 and 3.2 are intended to be in the alternative, so that if Client owes a payment in Section 3.1 with regard to the achievement of a milestone, Client shall have no obligation to make any additional payment with regard to the achievement of the corresponding milestone set forth in Section 3.2 for any Product, and vice versa. In addition, Client shall deliver to Catalent within [***] following the end of each calendar quarter following Launch (i) a written statement setting forth in reasonable detail its calculation of the contingent sale fee set forth in Section 3.1(B) or 3.2(B), if any, due for such most recently completed calendar quarter, including its calculation of Net Sales and all appropriate backup information, and (ii) payment of the contingent sale fee due on such Net Sales. Payments shall be made in United States dollars. If any conversion of foreign currency to United States dollars is required in connection with payments pursuant to Section 3, such conversion shall be made at the exchange rate reported in *The Wall Street Journal* on the last business day of the quarterly reporting period to which any such payment relates. In the event payment is not received by Catalent on or before the due date, then Catalent may, in addition to any other remedies available at equity or in law, at its option, elect to do any one or more of the following: (A) charge interest on the outstanding sum from the due date (both before and after any judgment) at [***]% per [***] until paid in full (or, if less, the maximum amount permitted by Applicable Laws); and/or (B) terminate this Agreement pursuant to Section 9.3.

3.5 Taxes. All taxes, duties and other amounts assessed (excluding tax based on Catalent's net income and franchise taxes) in connection with the sale of the GPEx Cell Line to Client hereunder are the responsibility of Client.

3.6 Records; Audit Rights. Client will keep complete and accurate books and records relating to its calculation of Net Sales (including all relevant deductions) and is achievement of the milestone events referred to in Sections 3.1(A) and 3.2(A) for at least [***] after the expiration of the year to which they relate. Upon the written request and not more than [***] per [***], Catalent shall be entitled to audit, or to have an independent accountant audit, such books and records. Client shall provide the auditors with access during normal business hours to appropriate space at Client's relevant location and to such of the pertinent books and records of Client as may be reasonably necessary to verify the matters in question; *provided*, that such

auditors shall be subject to the obligations of confidentiality at least as strict as those set forth in this Agreement. Prior to disclosing the results of any such audit to Catalent, the auditors shall present Client with a preliminary report of findings and provide Client with an opportunity to respond to any questions raised or issues identified. If an audit discloses an underpayment by Client of any amounts paid pursuant to any provision of this Agreement, such amounts shall be paid to Catalent within [***] after the date Client receives the auditors' final written report. Any fees and expenses of the audit shall be paid by Catalent unless the audit discloses an understatement by Client of more than [***]% of the aggregate amounts payable pursuant to this Agreement, in which case Client shall bear the responsibility for any such reasonable fees and expenses.

ARTICLE 4
CONFIDENTIALITY AND NON-USE

4.1 Mutual Obligation. Catalent and Client each agrees that it will not use the other party's Confidential Information except in connection with the performance of its obligations hereunder and will not disclose the other party's Confidential Information to any third party without the prior written consent of the other party, except as required by law, regulation or court or administrative order; *provided*, that prior to making any such legally required disclosure, the party making such disclosure shall give the other party as much prior notice of the requirement for and contents of such disclosure as is practicable under the circumstances. Notwithstanding the foregoing, each party may disclose the other party's Confidential Information to any of its Affiliates that (A) need to know such Confidential Information for the purpose of performing under this Agreement, (B) are advised of the contents of this Article and (C) agree to be bound by the terms of this Article.

4.2 Definition. As used in this Agreement, the term "**Confidential Information**" includes all such information furnished by Catalent or Client, or any of their respective representatives or Affiliates, to the other party or its representatives or Affiliates, whether furnished before, on or after the Effective Date and furnished in any form, including written, verbal, visual, electronic or in any other media or manner. Confidential Information includes all proprietary technologies, know-how, trade secrets, discoveries, inventions and any other intellectual property (whether or not patented), analyses, compilations, business or technical information and other materials prepared by either party, or any of their respective representatives or Affiliates, containing or based in whole or in part on any such information furnished by the other party or its representatives or Affiliates. Confidential Information also includes the existence of this Agreement and its terms.

4.3 Exclusions. Notwithstanding Section 4.2, Confidential Information does not include information that (A) is or becomes generally available to the public or within the industry to which such information relates other than as a result of a breach of this Agreement, (B) is already known by the receiving party at the time of disclosure as evidenced by the receiving party's

written records, (C) becomes available to the receiving party on a non-confidential basis from a source that is entitled to disclose it on a non-confidential basis or (D) was or is independently developed by or for the receiving party without reference to or use of the Confidential Information of the other party as evidenced by the receiving party's written records.

4.4 No Implied License. Except as expressly set forth in Section 4.1, the receiving party will obtain no right of any kind or license under any Confidential Information of the disclosing party, including any patent application, patent or other intellectual property (including, where Client is the receiving party, the GPEx Technology), by reason of this Agreement. All Confidential Information will remain the sole property of the party disclosing such information or data, subject to Article 5; *provided*, that Client agrees to allow Catalent to use data obtained by Catalent from its development of the GPEx Cell Line prior to the Effective Date, so long as such data is not identifiable to Client, for marketing and demonstration of the GPEx Technology to third parties.

4.5 Return of Confidential Information. Upon expiration or termination of this Agreement, the party receiving Confidential Information will cease its use and, upon request, within [***] either return or destroy (and certify as to such destruction) all Confidential Information of the other party, including any copies thereof, except for a single copy thereof which may be retained for the sole purpose of determining the scope of the obligations incurred under this Agreement.

4.6 Survival. The obligations of this Article will terminate [***] from the expiration or termination of this Agreement.

ARTICLE 5
REPRESENTATIONS AND WARRANTIES

5.1 Catalent. Catalent represents, warrants and undertakes to Client that:

A. to its knowledge, it has all necessary ownership or rights to use the GPEx Technology the purposes of fulfilling its obligations under this Agreement;

B. it has the lawful right to sell the GPEx Cell Line to Client hereunder; and

C. it has not granted any rights to the GPEx Cell Line that may conflict with the rights granted to Client hereunder.

5.2 Client. Client represents, warrants and undertakes to Catalent that:

A. to its knowledge, its Product or Client's manufacture, use or sale of any Products for the purposes anticipated by this Agreement, will not infringe, misappropriate or violate any patent, trademark, trade secret, copyright or other intellectual property or other proprietary rights of any third party;

B. Client shall use the GPEx Cell Line solely for the Purpose and otherwise as set forth herein, and in compliance with all laws; specifically, Client shall not permit the human consumption of any Products, except to the extent such consumption occurs in the course of clinical studies that expressly permit such use and that have been approved by appropriate Regulatory Authorities or following receipt of all necessary Regulatory Approvals for commercial use and sale; and

C. as of the Effective Date, Client intends to file an IND (or equivalent non-U.S. filings) in respect of the Product.

5.3 Limitations. THE REPRESENTATIONS AND WARRANTIES SET FORTH IN THIS ARTICLE ARE THE SOLE AND EXCLUSIVE REPRESENTATIONS AND WARRANTIES MADE BY EACH PARTY TO THE OTHER PARTY, AND NEITHER PARTY MAKES ANY OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES OF ANY KIND WHATSOEVER, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE.

ARTICLE 6
INDEMNIFICATION

6.1 Indemnification by Catalent. Catalent shall indemnify and hold harmless Client, its Affiliates, and their respective directors, officers, employees and agents ("**Client Indemnitees**") from and against any and all suits, claims, losses, demands, liabilities, damages, costs and expenses (including reasonable attorneys' fees) in connection with any suit, demand or action by any third party ("**Losses**") arising out of or resulting from (A) any breach of its representations, warranties or obligations set forth in this Agreement or (B) any negligence or willful misconduct by Catalent; except to the extent that any of the foregoing arises out of or results from any Client Indemnitee's negligence, willful misconduct or breach of this Agreement.

6.2 Indemnification by Client. Client shall indemnify and hold harmless Catalent, its Affiliates, and their respective directors, officers, employees and agents ("**Catalent Indemnitees**") from and against any and all Losses arising out of or resulting from (A) any breach of its representations, warranties or obligations set forth in this Agreement, (B) any manufacture, packaging, sale, promotion, distribution by or on behalf of Client of, or use of or exposure to, the GPEx Cell Line or Product, including product liability or strict liability, (C) the conduct of any clinical trials by Client utilizing the Product, or (D) any negligence or willful misconduct by Client; except to the extent that any of the foregoing arises out of or results from any Catalent Indemnitee's negligence, willful misconduct or breach of this Agreement.

6.3 [***]. Notwithstanding Sections 6.1, 6.2 or any other provision of this Agreement, neither party shall have any obligation to indemnify the other in respect of any claim under or relating to [***].

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

6.4 Indemnification Procedures. All indemnification obligations in this Agreement are conditioned upon the party seeking indemnification (A) promptly notifying the indemnifying party of any claim or liability of which the party seeking indemnification becomes aware (including a copy of any related complaint, summons, notice or other instrument); *provided*, that failure to provide such notice within a reasonable period of time shall not relieve the indemnifying party of any of its obligations hereunder except to the extent the indemnifying party is prejudiced by such failure, (B) allowing the indemnifying party, if the indemnifying party so requests, to conduct and control the defense of any such claim or liability and any related settlement negotiations (at the indemnifying party's expense), (C) cooperating with the indemnifying party in the defense of any such claim or liability and any related settlement negotiations (at the indemnifying party's expense) and (D) not compromising or settling any claim or liability without prior written consent of the indemnifying party.

ARTICLE 7
LIMITATIONS OF LIABILITY

7.1 EXCEPT IN THE EVENT OF [***], CATALENT'S TOTAL LIABILITY UNDER THIS AGREEMENT SHALL IN NO EVENT EXCEED [***].

7.2 NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY FOR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS OF REVENUES, PROFITS OR DATA ARISING OUT OF PERFORMANCE UNDER THIS AGREEMENT, WHETHER IN CONTRACT OR IN TORT, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES

ARTICLE 8
INSURANCE

Client shall, at its own cost and expense, obtain and maintain in full force and effect the following insurance during the Term: (A) Commercial General Liability Insurance with a per occurrence limit of not less than an amount equivalent to $[***]; (B) Products and Completed Operations Liability Insurance (including coverage for Products used in clinical trials) with a per occurrence limit of not less than an amount equivalent to $[***]; and (C) Workers Compensation and Employers Liability Insurance, with statutory limits for Workers Compensation and Employers Liability limits of not less than an amount equivalent to $[***] per accident The parties hereby acknowledge and agree that Client may self-insure all or any portion of the above-required insurance. Client shall maintain levels of insurance or self insurance sufficient to meet its obligations under this Agreement. In the event that any of the required policies of insurance are written on a claims made basis, then such policies shall be maintained during the entire Term and for a period of not less than [***] following the expiration or termination of this Agreement. Client shall furnish certificates of insurance evidencing the required insurance policies to Catalent as soon as practicable after the Effective Date and within [***] after renewal of such policies. Each insurance policy that is required under this Agreement shall be obtained from an insurance carrier with an [***].

ARTICLE 9
TERM AND TERMINATION

9.1 Term. This Agreement shall commence on the Effective Date and continue until terminated in accordance with this Article 5 (the "**Term**").

9.2 Voluntary Termination by Client. Client may terminate this Agreement without cause at any time during the Term on [***] prior written notice to Catalent.

9.3 Mutual Termination Rights. Either party may terminate this Agreement immediately without further action if (A) the other party files a petition in bankruptcy, or enters into an agreement with its creditors, or applies for or consents to the appointment of a receiver, administrative receiver, trustee or administrator, or makes an assignment for the benefit of creditors, or suffers or permits the entry of any order adjudicating it to be bankrupt or insolvent and such order is not discharged within [***], or takes any equivalent or similar action in consequence of debt in any jurisdiction or (B) the other party materially breaches any of the provisions of this Agreement and such breach is not cured within [***] after the giving of written notice requiring the breach to be remedied; *provided*, that in the case of a failure of Client to make payments in accordance with the terms of this Agreement, Catalent may terminate this Agreement if such payment breach is not cured within [***] of receipt of notice of nonpayment from Catalent.

9.4 Effect of Termination. Termination of this Agreement shall be without prejudice to any rights or obligations that accrued to the benefit of either party prior to such termination. In the event of a termination of this Agreement, (A) Client's ownership rights in the GPEx Cell Line shall automatically terminate and title thereto shall revert to Catalent, (B) Client shall immediately destroy (and certify such destruction to Catalent) all remaining stores of the GPEx Cell Line in its possession or control, (C) Client shall have a period of no more than [***] to sell any remaining inventories of Products, it being understood that such sales shall remain subject to the terms of this Agreement, including, the obligations set forth in Article 3, and (D) Client shall have no further obligation to pay Catalent any fees set forth under Article 3 except as required pursuant to Section 9.4(C). Upon Client's request, Catalent shall promptly destroy (and certify such destruction to Client) all remaining stores of the GPEx Cell Line in its possession or control, except that Catalent may retain a reasonable legacy quantity of the GPEx Cell Line solely for archival uses.

9.5 Survival. The rights and obligations of the parties shall continue under Articles 6 (Indemnification), 7 (Limitations of Liability), 10 (Notice), 11 (Miscellaneous); under Articles 4 (Confidentiality and Non-Use) and 8 (Insurance), in each case to the extent expressly stated therein; and under Sections 2.2 (No License), 2.4 (Client Handling), 3.4 (Payment Terms), 3.5

(Taxes), 3.6 (Records; Audit Rights), 5.3 (Limitations on Warranties), 9.4 (Effect of Termination) and 9.5 (Survival), in each case in accordance with their respective terms if applicable, notwithstanding termination of this Agreement.

ARTICLE 10
NOTICE

All notices and other communications hereunder shall be in writing and shall be deemed given: (A) when delivered personally; (B) when delivered by facsimile transmission (receipt verified); (C) when received or refused, if mailed by registered or certified mail (return receipt requested), postage prepaid; (D) upon confirmed receipt of facsimile or email; or (E) when delivered, if sent by express courier service, to the parties at the following addresses (or at such other address for a party as shall be specified by like notice; *provided*, that notices of a change of address shall be effective only upon receipt thereof):

To Client:	Vaccinex, Inc. 1895 Mt. Hope Avenue Rochester, NY 14620 Attention: Raymond E. Watkins Senior Vice President & Chief Operating Officer Facsimile: [***] Email: [***]
With a copy to:	Adkins, Plant, Elvins & Black, PLLC 4616 25th Avenue NE, #725 Seattle, WA 98104 USA Attn: Joanna Black Facsimile: [***] Email: [***]
To Catalent:	Catalent Pharma Solutions, LLC 8137 Forsythia Street Middleton, Wisconsin 53562 USA Attention: General Manager Facsimile: [***] Email: [***]
With a copy to:	Catalent Pharma Solutions, LLC 14 Schoolhouse Road Somerset, New Jersey 08873 USA Attn: General Counsel (Legal Department) Facsimile: [***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

ARTICLE 11
MISCELLANEOUS

11.1 Entire Agreement; Amendments. This Agreement, together with that certain Confidentiality Agreement dated September 3, 2008 between the parties and the Project Documents, constitutes the entire understanding between the parties, and supersedes any contracts, agreements or understandings (oral or written) of the parties, with respect to the subject matter hereof. This Agreement supersedes the Letter of Intent for purposes of the GPEx Cell Line only (and for purposes of no other cell lines developed under the Letter of Intent). No term of this Agreement may be amended except upon written agreement of both parties, unless otherwise expressly provided in this Agreement.

11.2 Captions; Certain Conventions. The captions in this Agreement are for convenience only and are not to be interpreted or construed as a substantive part of this Agreement. Unless otherwise expressly provided herein or the context of this Agreement otherwise requires, (A) words of any gender include each other gender, (B) words such as "herein", "hereof', and "hereunder" refer to this Agreement as a whole and not merely to the particular provision in which such words appear, (C) words using the singular shall include the plural, and vice versa, (D) the words "include(s)" and "including" shall be deemed to be followed by the phrase "but not limited to", "without limitation" or words of similar import, (E) the word "or" shall be deemed to include the word "and" (e.g., "and/or") and (F) references to "Article," "Section," "subsection," "clause" or other subdivision, or to an Attachment or other appendix, without reference to a document are to the specified provision or Attachment of this Agreement. This Agreement shall be construed as if it were drafted jointly by the parties.

11.3 Further Assurances. The parties agree to execute, acknowledge and deliver such further instruments and to take all such other incidental acts as may be reasonably necessary or appropriate to carry out the purpose and intent of this Agreement.

11.4 No Waiver. Failure by either party to insist upon strict compliance with any term of this Agreement in any one or more instances will not be deemed to be a waiver of its rights to insist upon such strict compliance with respect to any subsequent failure.

11.5 Severability. If any term of this Agreement is declared invalid or unenforceable by a court or other body of competent jurisdiction, the remaining terms of this Agreement will continue in full force and effect.

11.6 Independent Contractors. The relationship of the parties is that of independent contractors, and neither party will incur any debts or make any commitments for the other party. Nothing in this Agreement is intended to create or will be construed as creating between the parties the relationship of joint ventures, co-partners, employer/employee or principal and agent.

11.7 Successors and Assigns. This Agreement will be binding upon and inure to the benefit of the parties, their successors and permitted assigns. Neither party may assign this Agreement, in whole or in part, without the prior written consent of the other party, except that either party may, without the other party's consent, assign this Agreement to an Affiliate or to a successor to substantially all of the business or assets of the assigning company or the assigning company's business unit responsible for performance under this Agreement.

11.8 No Third Party Beneficiaries. This Agreement shall not confer any rights or remedies upon any person or entity other than the parties named herein and their respective successors and permitted assigns.

11.9 Governing Law. This Agreement shall be governed by and construed under the laws of the State of New York, USA, excluding its conflicts of law provisions. **The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement**.

11.10 Alternative Dispute Resolution. If any dispute arises between the parties in connection with this Agreement, such dispute shall be presented to the respective presidents or senior executives of Catalent and Client for their consideration and resolution. If such parties cannot reach a resolution of the dispute, then such dispute shall be resolved by binding alternative dispute resolution in accordance with the then existing commercial arbitration rules of CPR Institute for Dispute Resolution, 366 Madison Avenue, New York, NY 10017. Arbitration shall be conducted in the jurisdiction of the defendant party.

11.11 Prevailing Party. In any dispute resolution proceeding between the parties in connection with this Agreement, the prevailing party will be entitled to recover its reasonable attorney's fees and costs in such proceeding from the other party.

11.12 Publicity. Neither party shall make any press release or other public disclosure regarding this Agreement or the transactions contemplated hereby without the other party's express prior written consent, except as required under applicable laws or by any governmental agency or by the rules of any stock exchange on which the securities of the disclosing party are listed, in which case the party required to make the press release or public disclosure shall use commercially reasonable efforts to obtain the approval of the other party as to the form, nature

and extent of the press release or public disclosure prior to issuing the press release or making the public disclosure. In addition, Client shall not use the Catalent name or the names of any of the inventors of the GPEx Technology in any advertising, promotion or sales without the prior written consent of Catalent; provided, that Client may state that the Products have been manufactured utilizing a GPEx Cell Line produced under one or more of the patents and applications comprising the GPEx Technology. Client shall not use Catalent's name in a manner that could be construed as an endorsement of Client's Product, including any scientific conclusion as to safety or efficacy.

11.13 [Reserved].

11.14 Force Majeure. Except as to payments required under this Agreement, neither party shall be liable in damages for, nor shall this Agreement be terminable or cancelable by reason of, any delay or default in such party's performance hereunder if such default or delay is caused by events beyond such party's reasonable control, including acts of God, regulation or law or other action or failure to act of any government or agency thereof, war or insurrection, civil commotion, destruction of production facilities or materials by earthquake, fire, flood or weather, labor disturbances, epidemic or failure of suppliers, public utilities or common carriers; *provided*, that the party seeking relief under this Section shall immediately notify the other party of such cause(s) beyond such party's reasonable control. The party that may invoke this Section shall use commercially reasonable efforts to reinstate its ongoing obligations to the other party as soon as practicable. If the cause(s) shall continue unabated for [***], then both parties shall meet to discuss and negotiate in good faith what modifications to this Agreement should result from such cause(s).

11.15 Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed an original but all of which together will constitute one and the same instrument. Any photocopy, facsimile or electronic reproduction of the executed Agreement shall constitute an original.

[Signature page follows]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

IN WITNESS WHEREOF, the parties have caused their respective duly authorized representatives to execute this Agreement effective as of the Effective Date.

CATALENT PHARMA SOLUTIONS, LLC		**VACCINEX, INC.**	
By:	/s/ Michael E. Jenkins, Ph.D.	By:	/s/ Maurice Zauderer, Ph.D.
Name:	Michael E. Jenkins, Ph.D.	Name:	Maurice Zauderer, Ph.D.
Its:	General Manager	Its:	President & Chief Executive Officer

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

ATTACHMENT A: EXPRESSION PRODUCTS

[***]

[***] INDICATES FIVE PAGES OF MATERIAL THAT WERE OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

Exhibit 10.14

FINAL

AMENDED AND RESTATED EXCHANGE AGREEMENT

THIS AMENDED AND RESTATED EXCHANGE AGREEMENT (this "**Agreement**") is entered into as of October 24, 2014 among:

(1) **VX PARTNERS INC.**, an Ontario corporation ("**VX1 GP**");

(2) **VX2 GENERAL PARTNER INC.**, an Ontario corporation ("**VX2 GP**")

(3) **VACCINEX PRODUCTS, LP**, a Delaware limited partnership ("**LP**");

(4) **VACCINEX, INC.**, a Delaware corporation ("**Vaccinex**");

(5) **FCMI FINANCIAL CORPORATION**, an Ontario corporation ("**FCMI**");

(6) **FCMI PARENT CO.**, a Nova Scotia Unlimited Liability Company ("**FCMI Parent**").

Each of the above are referred to herein individually, as a "**Party**," and collectively, as the "**Parties**."

WHEREAS certain of the Parties, together with VX Limited Partnership, an Ontario limited partnership ("**VX LP**"), VX Therapeutics Limited Partnership, a Delaware limited partnership ("**VX1**"), Vaccinex Products, LLC, a Delaware limited liability company ("**Vaccinex Sub**"), and FEZ Financial Corporation, an Ontario corporation, entered into a certain Exchange Agreement, dated as of June 18, 2012 (the "**Prior Agreement**");

AND WHEREAS Vaccinex Sub merged with and into Vaccinex with Vaccinex surviving such merger and Vaccinex succeeded to the rights of Vaccinex Sub under the Prior Agreement;

AND WHEREAS VX LP was liquidated and dissolved and the units of limited partnership interest in VX1 held by VX LP were distributed to VX LP's limited partners;

AND WHEREAS VX2 Limited Partnership ("**VX2 LP**") was liquidated and dissolved and the units of limited partnership interest in VX2 (Delaware) Limited Partnership ("**VX2**") held by VX2 LP were distributed to VX2 LP's limited partners;

AND WHEREAS immediately prior to the execution and delivery of this Agreement, VX1 and VX2 consolidated, with LP resulting from such consolidation (the "**Consolidation**");

AND WHEREAS pursuant to the Consolidation, LP issued units of limited partnership interest (the "**Units**") to the limited partners of VX1 and VX2 (each such limited partner, other than Vaccinex, shall be an "**Investor**" hereunder for so long as such person holds Units);

AND WHEREAS VX1 GP was the general partner of VX1 prior to the Consolidation, and VX2 GP was the general partner of VX2 prior to the Consolidation;

AND WHEREAS following the Consolidation, Vaccinex is the general partner of LP and one of the limited partners of LP;

AND WHEREAS pursuant to the Prior Agreement, Vaccinex and the limited partners of VX LP had certain exchange rights to cause the exchange of 3.4 units of limited partnership interest of VX LP for 1 Vaccinex Share (as defined below);

AND WHEREAS prior to the Consolidation, VX1 and VX2 effected a reverse unit split such that following the Consolidation, the number of Units held by the Investors in the aggregate is equal to the number of Vaccinex Shares issuable in the aggregate under this Agreement;

AND WHEREAS that certain Agreement and Omnibus Amendment dated as of June 18, 2012 ("**Omnibus Amendment**"), entered into by certain of the Parties, was terminated pursuant to the Consolidation;

AND WHEREAS VX1 GP and VX2 GP are entering into this agreement as agent on behalf of the Investors and, in connection with approving the Consolidation, the Investors approved this Agreement;

AND WHEREAS pursuant to Section 18 of the Prior Agreement, the Prior Agreement may be amended by the written agreement of Vaccinex and VX GP;

AND WHEREAS in connection with the Consolidation and the termination of the Omnibus Amendment, all of the Parties agree to amend and restate the Prior Agreement to provide the Investors and Vaccinex the right to exchange, or cause the exchange, of Units for Vaccinex Shares on the terms and subject to the conditions herein.

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, the Parties hereby agree to amend and restate the Prior Agreement in its entirety as follows:

1. As used herein, the following terms have the following meanings:

"**Exchange**" means the transfer by an Investor to Vaccinex of the number of Units in exchange for a number of Vaccinex Shares calculated pursuant to the Exchange Ratio. As of the date hereof, the Investors hold an aggregate of 12,025,873 Units which are exchangeable hereunder for an aggregate of 12,025,873 Vaccinex Shares.

"**Exchange Notice**" means a notice, in substantially the form of Schedule A attached hereto, provided by or on behalf of an Investor to exercise such Investor's Exchange Right.

"**Exchange Ratio**" means 1 Vaccinex Share for every 1 Unit transferred pursuant to an Exchange (subject to appropriate adjustment in the event of any splits, dividends, combinations, subdivisions, recapitalizations or the like, affecting the Units or Vaccinex Shares, in each case, following the date hereof, provided, however, that no such adjustment shall be made to effect any such event affecting the Vaccinex Shares to the extent that a corresponding adjustment is made to all issued and outstanding Units prior to such Exchange under the terms of the LPA).

"**Exchange Right**" means the right of the Investors, FCMI and Vaccinex hereunder to initiate an Exchange.

"**LPA**" means the Agreement of Limited Partnership of LP, dated as of the date hereof, between Vaccinex and the Investors.

"**Vaccinex Shares**" means shares of authorized common stock, par value $0.0001 per share, of Vaccinex.

2. In the event of a request of an Investor made to Vaccinex to exercise such Investor's Exchange Right in respect of all but not less than all of that Investor's Units ("**Exchange Units**"):

   (a) Such Investor will transfer to Vaccinex the Exchange Units, or such transfer may be effected by Vaccinex, pursuant to the power of attorney granted by such Investor to Vaccinex as general partner of LP under the limited partnership agreement of LP;

   (b) Vaccinex will issue to such Investor the number of Vaccinex Shares as determined by the Exchange Ratio in exchange for such Exchange Units.

   The right of Investors to exercise an Exchange Right is expressly limited to those Units held by the Investors as of the date hereof (subject to appropriate adjustment in the event of any splits, dividends, combinations, subdivisions, recapitalizations or the like, affecting the Units following the date hereof), which Units are set forth on Schedule B to the LPA as of the date hereof.

3. Without limiting Section 2, in the event of a request of FCMI made to Vaccinex to exercise FCMI's Exchange Right in respect of all but not less than all of FCMI's Units:

   (a) Each Investor, including FCMI, will transfer to Vaccinex all but not less than all of that Investor's Units, or such transfer may be effected by Vaccinex, pursuant to the power of attorney granted by such Investor to Vaccinex as general partner of LP under the limited partnership agreement of LP;

   (b) Vaccinex will issue to each Investor, including FCMI, the number of Vaccinex Shares as determined by the Exchange Ratio in exchange for such Investor's Units.

4. Vaccinex may exercise the Exchange Right at its option, at any time, so as to result in the transfer of all but not less than all of the then-outstanding Units to Vaccinex in any of the following circumstances:

   (a) upon or in connection with the completion of such Exchange, Vaccinex distributes an amount of cash to the Investors, in the case of FCMI, equal to 15% and, in the case of all other Investors, equal to 23%, in each case, of the fair market value of the Vaccinex Shares delivered pursuant to such Exchange, as such fair market value is reasonably determined in good faith by the Board of Directors of Vaccinex (without limitation, such cash may be made available as a cash distribution or through the purchase or repurchase of Vaccinex Shares or Units held by or issuable to the Investors);

   (b) Vaccinex has entered into (including by entering into definitive documents related thereto) a transaction such as a sale, merger or consolidation such that Vaccinex Shares are or will be sold or, exchanged for cash and/or marketable securities;

   (c) At any time on or after the fifth anniversary of the date hereof; and

   (d) Vaccinex or LP has entered into (including by entering into definitive documents related thereto) a licensing, partnering or similar transaction, including a product sale or option to enter into the foregoing, with respect to one or more of the products and indications licensed to LP by Vaccinex, and all amounts then due and owing to LP in connection with such transaction have been paid to LP; provided, that Vaccinex will use its commercially reasonable efforts to structure the transaction, or enter into such related transactions, such that the Investors are either able to defer tax liabilities, to the extent permitted by law, or to monetize a portion of their Units or Vaccinex Shares so as to defray any taxes arising as a result of the transaction, in each case, in accordance with applicable law.

For the avoidance of doubt, (i) following the consummation of an Exchange in accordance with this Agreement with respect to all Units, other than as a holder of Vaccinex Shares, if applicable, neither LP nor the Investors shall have a right to receive proceeds of such transaction paid to Vaccinex or LP following the consummation of such Exchange, (ii) the Parties agree and acknowledge that nothing contained in this Agreement shall require Vaccinex or LP to obtain the consent of any Party hereto in order to enter into or consummate any such transaction.

5. In the event either an Investor, FCMI or Vaccinex exercise their Exchange Right hereunder, each Investor, FCMI and Vaccinex shall take all steps necessary to effect the applicable Exchange on the terms and conditions contained herein, including by taking any action reasonably requested by Vaccinex with respect to the transfer of Units.

6. Vaccinex Shares issued in connection with an Exchange shall be issued in accordance with the registration instructions set forth in the Exchange Notice, in the absence of which they shall be issued in the name of the applicable Investor.

7. Notwithstanding anything herein to the contrary, if applicable, no fractional Vaccinex Shares shall be issuable upon exercise of the Exchange Right or in connection with an Exchange. If applicable, the number of Vaccinex Shares to be issued shall be rounded down to the nearest whole number of Vaccinex Shares.

8. Prior to the consummation of an applicable Exchange in accordance with this Agreement, no Investor shall have any rights of a holder of Vaccinex Shares, or otherwise as a stockholder of Vaccinex, including, without limitation, the right to vote on any matter presented to the stockholders of Vaccinex or receive any dividends or distributions on Vaccinex Shares or other shares of Vaccinex stock. Following the consummation of an applicable Exchange in accordance with this Agreement, the Investors shall not have any rights as a holder of Units, including, without limitation, with respect to the management of LP, any distribution made to the holders of Units or any other interest in LP.

9. Vaccinex shall reserve and keep available during the term of this Agreement, out of its authorized and unissued shares of common stock, that number of Vaccinex Shares that will from time to time be sufficient to permit the exercise in full of the Exchange Right. If in connection with the exercise of an Exchange Right, Vaccinex does not have sufficient authorized and unissued Vaccinex Shares to permit the exercise in full of the Exchange Right, Vaccinex will promptly take such actions as are reasonably necessary to authorize additional Vaccinex Shares to permit the exercise in full of the Exchange Right, subject to applicable laws and the rights of Vaccinex stockholders.

10. The Parties hereby represent and warrant to each other as follows:

(a) Such Party has the full corporate or limited partnership power and authority, as applicable, to execute and deliver this Agreement and to carry out the transactions contemplated hereby;

(b) The execution and delivery of, and performance by such Party under, this Agreement and the consummation of the transactions contemplated hereby have been duly authorized by all necessary corporate or limited partnership action, as applicable, on the part of such Party and LP;

(c) Neither the execution and delivery of this Agreement nor the consummation of the transactions contemplated hereby will (i) violate any provision of the organizational documents of such Party, (ii) violate any provision of applicable law binding on such Party, or (iii) conflict with, result in a breach of, or constitute a default (or an event which, with notice or lapse of time, or both, would constitute a default) under any material contract binding on such Party;

(d) Schedule A to the LPA sets forth the true, correct and complete capitalization of LP, including all issued and outstanding Units and the holders thereof, and there are no holders of equity interests in or other securities of LP except for the Investors (all of whom are set forth on such Schedule A) and the general partnership interest and limited partnership interest of Vaccinex; and

(e) Except for the Units set forth on Schedule A to the LPA, there are no outstanding units or other partnership interests in LP, or options, warrants, rights (including conversion or preemptive rights and rights of first refusal or similar rights) or agreements, orally or in writing, to purchase or acquire from LP any units or partnership interests, or any securities convertible into or exchangeable for units or partnership interests of LP.

11. Vaccinex and LP hereby represent and warrant to VX GP and VX LP as follows:

(a) Each of Vaccinex and LP have the full corporate or limited liability company power and authority, as applicable, to execute and deliver this Agreement and to carry out the transactions contemplated hereby;

(b) The execution and delivery of, and performance by Vaccinex and LP under, this Agreement and the consummation of the transactions contemplated hereby have been duly authorized by all necessary corporate or limited liability company action, as applicable, on the part of Vaccinex and LP, and no other corporate or limited liability company proceedings, as applicable, are necessary to authorize this Agreement and the transactions contemplated hereby;

(c) Neither the execution and delivery of this Agreement nor the consummation of the transactions contemplated hereby will (i) violate any provision of the organizational documents of Vaccinex or LP, or (ii) violate any provision of applicable law binding on such Party; and

(d) All Vaccinex Shares which may be issued upon an Exchange hereunder shall, upon issuance in accordance with this Agreement, be duly authorized, validly issued, fully paid and nonassessable, and free of any liens and encumbrances except as may be provided herein, restrictions under applicable federal and state securities laws, the certificate of incorporation of Vaccinex, as then in effect, or the Stockholders Agreements (as defined below) if then in effect, and for such liens and encumbrances as may be created by an Investor.

12. Each Party acknowledges that the Omnibus Amendment has been terminated in connection with the Consolidation.

13. Vaccinex may not unreasonably withhold its consent from any proposed transfer of Units to any person or entity which is not an Investor as of the date hereof (as reflected on Schedule A to the LPA as of the date hereof), and any holder of Units may, without the prior written consent of Vaccinex, transfer Units for bona fide estate planning purposes, either during or after such holder's lifetime or upon death by will or intestacy, to his or her spouse, child (natural or adopted), or any other direct lineal descendant of such holder (or of his or her spouse) (all of the foregoing collectively referred to as "**Family Members**"), or any custodian or trustee of any trust, partnership or limited liability company for the benefit of, or the ownership interests of which are owned wholly by, such holder or any such family members; provided, that (i) such holder shall deliver prior written notice to Vaccinex of such transfer, (ii) such Units and such transferee(s) shall remain subject to the terms of this Agreement; and (iii) such transfer shall be permitted by applicable law.

14. The obligations of Vaccinex to issue Vaccinex Shares and the rights of any holder of Units to receive Vaccinex Shares hereunder in connection with an Exchange are expressly subject to the execution and delivery by any recipient of Vaccinex Shares (including Investors, as applicable) of joinders or counterpart signature pages to all stockholders agreements binding on holders of Vaccinex Shares and such other documents or instruments as may be reasonably requested by Vaccinex, which may include transfer instruments with respect to the Units, transfer restrictions applicable to other holders of Vaccinex Shares, representations and warranties of such recipient regarding their ownership of the Units and/or the Vaccinex Shares or as may be necessary or advisable under United States federal and state securities laws (the "**Stockholders Agreements**").

15. The undersigned Parties agree that, notwithstanding Section 19(b) of the Prior Agreement, this Agreement shall amend, supersede and replace the Prior Agreement in all respects and this Agreement represents the entire understanding between the Parties with respect to the subject matter contained herein and supersedes all prior understandings and agreements, whether oral or written, including the Prior Agreement, among the Parties with respect to the subject matter contained herein.

16. This Agreement shall be effective as of the date first written above upon the execution and delivery hereof by each Party hereto.

17. This Agreement may be amended by mutual written agreement of Vaccinex and FCMI.

18. This Agreement may be terminated by mutual written agreement of Vaccinex and FCMI, and shall automatically terminate upon (a) the consummation of the Exchange with respect to all Units or (b) upon FCMI's prior written consent (which consent shall not be unreasonably withheld, conditioned or delayed), a merger or consolidation of LP with or into Vaccinex or any of its direct or indirect subsidiaries or controlled affiliates.

19. Any notice, consent, waiver or other communication given under this Agreement must be in writing and may be given by delivering it or sending it by confirmed email addressed:

(a) to Vaccinex:

Attention: Maurice Zauderer
Email: mzauderer@vaccinex.com

with a copy (which shall not constitute notice) to:

Attention: Asher M. Rubin
Email: asher.rubin@hoganlovells.com

(b) to LP:

Attention: Maurice Zauderer
Email: mzauderer@vaccinex.com

with a copy (which shall not constitute notice) to:

Attention: Asher M. Rubin
Email: asher.rubin@hoganlovells.com

(c) to FCMI or FCMI Parent:

Attention: Dan Scheiner

with a copy (which shall not constitute notice) to:

Attention: Ronald Rutman

Any such communication is deemed to have been delivered on the date of confirmed transmission, unless that day is not a business day in Canada or in the United States or if such confirmed transmission is not received during normal business hours of the recipient, in which event it will be deemed delivered on the next following business day. Any Party may change its email address for service by notice given in accordance with the foregoing and any subsequent notice must be sent to such Party at its changed email address.

20. None of the Parties shall sell, transfer or assign (including by operation of law) its interest in this Agreement without (a) providing reasonable prior written notice to the other Parties, and (b) subject to Section 13, obtaining the prior written consent of Vaccinex. Any transfer or assignment not permitted under this section shall be null and void and of no effect whatsoever.

21. The provisions hereof shall inure to the benefit of the Parties and their respective successors and permitted assigns.

22. Nothing in this Agreement, express or implied, is intended to confer upon any person other than the Parties hereto or their respective successors and permitted assigns and the Investors any rights, remedies, obligations, or liabilities under or by reason of this Agreement.

23. Without limiting anything else contained herein, the Parties shall do or cause to be done all such reasonable acts and things as may be necessary, proper, or advisable, consistent with all applicable laws, to consummate and make effective the transactions contemplated hereby on the terms and subject to the conditions contained herein. Without limiting the foregoing, each Party shall use its commercially reasonable efforts, and the other Parties shall cooperate with such efforts, to (a) execute and deliver, or cause to be executed and delivered, such further documents and instruments, including tax certifications and documents, in each case as may be necessary or proper in the reasonable judgment of Vaccinex, to carry out the provisions and purposes of this Agreement and to comply with applicable legal requirements and (b) obtain any consents, approvals or authorization, or effect the notification of or filing with, each person, whether private or governmental, whose consent or approval is required in order to permit the consummation of the transactions contemplated hereby on the terms and subject to the conditions contained herein.

24. The construction and performance of this Agreement shall be governed by the laws of the State of Delaware.

25. This Agreement may be executed in one or more counterparts, each of which will be deemed an original and all of which together will constitute one and the same instrument. This Agreement may be executed through delivery of duly executed signature pages by facsimile or electronic mail.

[*signature pages follow*]

IN WITNESS WHEREOF the Parties have executed this Amended and Restated Exchange Agreement as of the date first above written.

LP

By: Vaccinex, Inc., its general partner

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President and Chief Executive Officer

IN WITNESS WHEREOF the Parties have executed this Amended and Restated Exchange Agreement as of the date first above written.

VACCINEX, INC.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer
Title: President and Chief Executive Officer

IN WITNESS WHEREOF the Parties have executed this Amended and Restated Exchange Agreement as of the date first above written.

VX PARTNERS INC.

By: /s/ Richard Sutin
Name: Richard Sutin
Title: Director

VX2 GENERAL PARTNER INC.

By: /s/ Richard Sutin
Name: Richard Sutin
Title: Director

IN WITNESS WHEREOF the Parties have executed this Amended and Restated Exchange Agreement as of the date first above written.

FCMI FINANCIAL CORPORATION

By: /s/ Dan Scheiner
Name: Dan Scheiner
Title: V.P.

FMCI PARENT CO.

By: /s/ Dan Scheiner
Name: Dan Scheiner
Title: V.P.

SCHEDULE A

EXCHANGE NOTICE

See attached.

EXCHANGE NOTICE

Vaccinex, Inc.
1895 Mt. Hope Avenue
Rochester, NY 14620

1. The undersigned hereby irrevocably elects to exercise its Exchange Right in respect of all but not less than all of its Units.

2. Please issue a certificate or certificates representing the Vaccinex Shares issuable upon the exchange of such Units in the name of the undersigned or in such other name as is specified below:

_____

_____

_____

(please print name and address above)

3. The undersigned represents it is acquiring the Vaccinex Shares solely for its own account and not as a nominee for any other party and not with a view toward the resale or distribution thereof except in compliance with applicable securities laws.

4. Capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Amended and Restated Exchange Agreement, dated October 24, 2014, among Vaccinex, Inc., VX Partners Inc., VX2 General Partners Inc., Vaccinex Products, LP, FCMI Financial Corporation, and FCMI Parent Co.

_____

[INVESTOR'S NAME]

_____

Date:

Exhibit 10.15

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

Execution Copy

CLINICAL TRIAL COLLABORATION AND SUPPLY AGREEMENT

This CLINICAL TRIAL COLLABORATION AND SUPPLY AGREEMENT (this "**Agreement**"), made as of October 4, 2016 (the "**Effective Date**"), is by and between Ares Trading S.A., Z.I de l'Ouriettaz, CH-1170 Aubonne, Switzerland ("**Merck**"), and Vaccinex, Inc., having a place of business at 1895 Mt. Hope Avenue, Rochester, NY 14620 ("**Vaccinex**"). Merck and Vaccinex are each referred to herein individually as "**Party**" and collectively as "**Parties**".

RECITALS

A. Merck is developing Merck Compound (as defined below) for the treatment of certain tumor types.

B. Vaccinex is developing the Vaccinex Compound (as defined below) for the treatment of certain tumor types.

C. Vaccinex desires to sponsor a clinical trial in which the Vaccinex Compound and Merck Compound would be dosed concurrently or in combination.

D. Merck and Vaccinex, consistent with the terms of this Agreement, desire to collaborate as more fully described herein, including by providing Merck Compound and the Vaccinex Compound for the Study (as defined below).

NOW, THEREFORE, in consideration of the premises and of the following mutual promises, covenants and conditions, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, mutually agree as follows:

1. Definitions.

For all purposes of this Agreement, the capitalized terms defined in this Article 1 and throughout this Agreement shall have the meanings herein specified.

1.1 "**Affiliate**" means, with respect to either Party, a firm, corporation or other entity which directly or indirectly owns or controls said Party, or is owned or controlled by said Party, or is under common ownership or control with said Party. For purposes of this definition, the word "**control**" means (i) the direct or indirect ownership of fifty percent (50%) or more of the outstanding voting securities of a legal entity, or (ii) possession, directly or indirectly, of the power to direct the management or policies of a legal entity, whether through the ownership of voting securities, contract rights, voting rights, corporate governance or otherwise. For clarity, Ares Trading S.A. is a wholly owned Affiliate of Merck KGaA.

1.2 **"Agreement**" means this agreement, as amended by the Parties from time to time, and as set forth in the preamble.

Note: Reference to "Merck" in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

1.3 "**Applicable Law**" means all international, federal, state, local, national and regional statutes, laws, rules, regulations and directives applicable to a particular activity hereunder, including performance of clinical trials, medical treatment and the processing and protection of personal and medical data, that may be in effect from time to time, including those promulgated by the United States Food and Drug Administration ("**FDA**"), state and national regulatory authorities, the European Medicines Agency ("**EMA**") and any successor agency to the FDA or EMA or any agency or authority performing some or all of the functions of the FDA or EMA in any jurisdiction outside the United States or the European Union (each a "**Regulatory Authority**" and collectively, "**Regulatory Authorities**"), and including without limitation cGMP and GCP (each as defined below); all data protection requirements such as those specified in the EU Data Protection Directive and the regulations issued under the United States Health Insurance Portability and Accountability Act of 1996, as amended ("**HIPAA**"); export control and economic sanctions regulations which prohibit the shipment of United States-origin products and technology to certain restricted countries, entities and individuals; anti-bribery and anticorruption laws pertaining to interactions with government agents, officials and representatives; laws and regulations governing payments to healthcare providers; and any United States or other country's or jurisdiction's successor or replacement statutes, laws, rules, regulations and directives relating to the foregoing.

1.4 "**Business Day**" means any day other than a Saturday, Sunday or any public holiday in the country where the applicable obligations are to be performed.

1.5 "**Calendar Quarter**" means a three-month period beginning on January, April, July or October 1st.

1.6 "**Calendar Year**" means a one-year period beginning on January 1st and ending on December 31st.

1.7 "**cGMP**" means the current Good Manufacturing Practices officially published and interpreted by EMA, FDA and other applicable Regulatory Authorities that may be in effect from time to time and are applicable to the Manufacture of the Compounds.

1.8 "**Change of Control**" means, with respect to a Party, a transaction with a Third Party(ies) involving (a) the acquisition, merger or consolidation, directly or indirectly, of such Party, and, immediately following the consummation of such transaction, the shareholders of such Party immediately prior thereto hold, directly or indirectly, as applicable, shares of capital stock of the surviving company representing less than fifty percent (50%) of the outstanding shares of such surviving or continuing company, (b) the sale of all or substantially all of the assets or business of such Party, or (c) an unaffiliated person, or group of unaffiliated persons acting in concert, acquire more than fifty percent (50%) of the voting equity securities or management control of such Party. Notwithstanding the foregoing, a Change of Control of Vaccinex shall not be deemed to have occurred as a result of an initial public offering of Vaccinex equity securities, or any follow-on offering of Vaccinex equity securities.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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1.9 “**Clinical Data**” means all data (including raw data) and results generated under the Study which are to be shared between Merck and Vaccinex, as set forth in the Data Sharing and Sample Testing Schedule; excluding, however, Sample Testing Results.

1.10 “**Clinical Quality Agreements**” means that certain clinical quality assurance agreement on customary terms to be mutually agreed as negotiated in good faith and entered into by the Parties in conjunction herewith within forty-five (45) days following the Effective Date, as such agreement may be amended from time to time.

1.11 “**CMC**” means Chemistry Manufacturing and Controls.

1.12 “**Combination**” means the use or method of using Merck Compound and the Vaccinex Compound in concomitant or sequential administration.

1.13 “**Compounds**” means Merck Compound and the Vaccinex Compound. A “**Compound**” means either Merck Compound or the Vaccinex Compound, as applicable.

1.14 “**Confidential Information**” means any information, Know-How or other proprietary information or materials furnished to one Party by the other Party pursuant to this Agreement, except to the extent that such information or materials: (a) was already known to the receiving Party, other than under an obligation of confidentiality, at the time of disclosure by the other Party, as demonstrated by competent evidence; (b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the receiving Party; (c) became generally available to the public or otherwise part of the public domain after its disclosure and other than through any act or omission of the receiving Party in breach of this Agreement; (d) was disclosed to the receiving Party by a Third Party who had no obligation to the disclosing Party not to disclose such information to others; or (e) was subsequently developed by the receiving Party without use of the Confidential Information, as demonstrated by competent evidence.

1.15 “**Continuing Party**” has the meaning set forth in Section 10.1.2.

1.16 “**CTA**” means an application to a Regulatory Authority for purposes of requesting the ability to start or continue a clinical trial, which CTA may consist of, or include, an IND or IMPD, as applicable.

1.17 “**Data Sharing and Sample Testing Schedule**” means the schedule describing each Party’s data sharing and sample testing obligations to the other Party, with respect to Clinical Data and Sample Testing Results, which shall be finalized in writing by mutual agreement of the Parties prior to the enrollment of the first patient in the Study.

1.18 **“Defending Party**” has the meaning set forth in Section 14.2.3.

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1.19 “**Delivery**” has the meaning set forth in Section 8.3.1 with respect to Merck Compound.

1.20 “**DEP Period Completion**” means the completion of the dose-escalating or Phase 1b portion of the Study in accordance with the Protocol Summary in Appendix A and the final Protocol.

1.21 “**Direct Manufacturing Cost**” shall include the sum of manufacturing fees; raw materials; direct labor; quality, release and in-process control costs; charges for reasonable spoilage, scrap or rework costs; freight and duty, and

factory overhead costs that can be directly attributed to such Compound, including but not limited to equipment maintenance and repair, supplies, ongoing stability program costs, other plant services, indirect labor and depreciation on direct capital assets.

1.22 “**Disposition Package**” has the meaning set forth in Section 8.7.1.

1.23 “**Dispute**” has the meaning set forth in Section 21.1.

1.24 “**Effective Date**” has the meaning set forth in the preamble.

1.25 **“EMA**” has the meaning set forth in the definition of Applicable Law.

1.26 “**FDA**” has the meaning set forth in the definition of Applicable Law.

1.27 “**First Press Release**” has the meaning set forth in Section 12.1.

1.28 “**Force Majeure**” has the meaning set forth in Section 16.

1.29 “**GCP**” means the Good Clinical Practices officially published by EMA, FDA and the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) that may be in effect from time to time and are applicable to the testing of the Compounds.

1.30 “**Government Official**” means: (a) any officer or employee of a government or any department, agency or instrument of a government; (b) any person acting in an official capacity for or on behalf of a government or any department, agency, or instrument of a government; (c) any officer or employee of a company or business owned in whole or part by a government; (d) any officer or employee of a public international organization such as the World Bank or United Nations; (e) any officer or employee of a political party or any person acting in an official capacity on behalf of a political party; and/or (f) any candidate for political office; who, when such Government Official is acting in an official capacity, or in an official decision-making role, has responsibility for performing regulatory inspections, government authorizations or licenses, or otherwise has the capacity to make decisions with the potential to affect the business of either of the Parties.

Note: Reference to “Merck” in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

1.31 **"HIPAA**" has the meaning set forth in the definition of Applicable Law.

1.32 "**IMPD"** means an Investigational Medicinal Product Dossier which includes all data required by Regulatory Authorities in the European Union for the performance of clinical trials in one or more European Union member states.

1.33 "**IND**" means the Investigational New Drug Application filed or to be filed with the FDA as described in Title 21 of the U.S. Code of Federal Regulations, Part 312, and the equivalent application in the jurisdictions outside the United States.

1.34 "**Indication**" means a generally acknowledged and clinically recognized form of a disease or condition, a significant manifestation of a disease or condition, symptoms associated with a form of a disease or condition, or a risk for a form of a disease or condition, in each case, for which a separate Regulatory Approval or a supplement thereto is filed, or is required to be filed, prior to sale, and which covers a separate distinct disease area (including a different stage, line of therapy, patient population or subpopulation, or other qualifying criterion within a disease or condition).

1.35 "**Indirect Manufacturing Costs**" shall include allocations of indirect factory overhead and site support costs, including but not limited to utilities, quality, planning, engineering, maintenance, safety, site science and technology, and depreciation on indirect capital assets, procurement, warehousing, and corporate services; shipping costs; all costs incurred by a Party in connection with audits conducted pursuant to the Clinical Quality Agreements; any non-refundable or non-creditable indirect taxes, customs and excise duties, or similar taxes paid or payable by any Third Party or Affiliate in relation to the Manufacture of any portion of such Compound. Allocations shall be based on such Compound's utilization relative to a manufacturing site's total activity.

1.36 "**Inventions**" means all inventions and discoveries (a) which are made or conceived in the design or performance of the Study and/or (b) which are made or conceived by a Party through use of (i) the Clinical Data and/or Sample Testing Results and/or (ii) the Confidential Information of the other Party.

1.37 "**Joint Combination Study Committee**" or "JCSC" has the meaning set forth in Section 3.9.

1.38 "**Jointly Owned Invention**" has the meaning set forth in Section 10.1.1.

1.39 "**Joint Patent Application**" has the meaning set forth in Section 10.1.2.

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1.40 **"Joint Patent**" means a patent that issues from a Joint Patent Application.

1.41 "**Know-How**" means any proprietary invention, innovation, improvement, development, discovery, computer program, device, trade secret, method, know-how, process, technique or the like, including manufacturing, use, process, structural, operational and other data and information, whether or not written or otherwise fixed in any form or medium, regardless of the media on which contained and whether or not patentable or copyrightable, that is not generally known or otherwise in the public domain.

1.42 "**Liability**" has the meaning set forth in Section 14.2.1.

1.43 "**Lead Prosecuting Party**" has the meaning set forth in Section 10.1.2.

1.44 "**Manager**" has the meaning set forth in Section 3.8.

1.45 "**Manufacture**," "**Manufactured**," or "**Manufacturing**" means all stages of the manufacture of a Compound, including planning, purchasing, manufacture, processing, compounding, storage, filling, packaging, waste disposal, labeling, leafleting, testing, quality assurance, sample retention, stability testing, release, dispatch and supply, as applicable.

1.46 "**Manufacturer's Release**" or **"Release**" has the meaning ascribed to such term in the Clinical Quality Agreements.

1.47 "**Manufacturing Cost**" shall mean the Direct Manufacturing Costs and the Indirect Manufacturing Costs, on a per vial basis.

1.48 "**Manufacturing Site**" means the facilities where a Compound is Manufactured by or on behalf of a Party, as such Manufacturing Site may change from time to time in accordance with Section 8.6 (Changes to Manufacturing).

1.49 "**Merck**" has the meaning set forth in the preamble.

1.50 "**Merck Class Compound**" means any small or large molecule that inhibits PD-1 or PD-L1 activity, including an anti-PD-L1 (programmed death-ligand 1) monoclonal antibody and any other antibody that blocks binding of PD-L1 to PD-1, and any formulations thereof.

1.51 "**Merck Compound**" means the antibody known as MSB0010718C referred to by Merck as "avelumab".

1.52 "**Merck Compound Inventions**" has the meaning set forth in Section 10.3.

1.53 "**Merck Liability**" has the meaning set forth in Section 14.2.2.

Note: Reference to "Merck" in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

1.54 “**Non-Conformance**” means, with respect to a given unit of Compound, an event that deviates from an approved cGMP requirement with respect to the applicable Compound, such as a procedure, Specification, or operating parameter (including shelf life as specified in Section 8.2 and the applicable Specifications), or that requires an investigation to assess impact to the quality of the applicable Compound. Classification of the Non-Conformance is detailed in the Clinical Quality Agreements.

1.55 “**Other Party**” has the meaning set forth in Section 14.2.3.

1.56 “**Opting-out Party**” has the meaning set forth in Section 10.1.2.

1.57 “**Party**” has the meaning set forth in the preamble.

1.58 “**Payer**” has the meaning set forth in Section 8.17.

1.59 “**Payee**” has the meaning set forth in Section 8.17.

1.60 “**Payments**” has the meaning set forth in Section 8.17.

1.61 “**Permitted Use**” means, with respect to a Party (i) seeking Regulatory Approval for the use of its respective Compound in the Combination; (ii) filing and prosecuting patent applications for Joint Inventions and enforcing any resulting patents, in each case, in accordance with Article 10; and/or (iii) to the extent such disclosure is required by a Regulatory Authority or otherwise under Applicable Law, in which case, the disclosing Party shall provide reasonable advance notice to the other Party before making such disclosure and, at the request of the other Party, cooperate with such other Party in obtaining a protective order or similar relief that prevents or limits the scope of or delays such disclosure.

1.62 “**Protocol**” means the written documentation that describes the Study and sets forth specific activities to be performed as part of the Study conduct, a summary of which is attached hereto as Appendix A.

1.63 “**Regulatory Approvals**” means any and all permissions (other than the Manufacturing approvals) required to be obtained from Regulatory Authorities and any other competent authority for the development, registration, importation, and commercialization of a Compound in the United States, Europe or other applicable jurisdictions for use in humans.

1.64 “**Regulatory Authorities**” has the meaning set forth in the definition of Applicable Law.

1.65 “**Related Agreements**” means the Safety Data Exchange Agreement and the Clinical Quality Agreements.

1.66 “**Replacement Threshold**” has the meaning set forth in Section 8.7.2(b).

Note: Reference to “Merck” in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

1.67 “**Safety Data Exchange Agreement**” means that certain pharmacovigilance agreement regarding the Compounds, on customary terms to be mutually agreed as negotiated in good faith and that shall be entered into by the Parties in conjunction herewith, within forty-five (45) days following the Effective Date and in any case prior to the enrollment of the first patient in the Study, as such agreement may be amended from time to time.

1.68 “**Samples**” means urine, blood and tissue samples from patients participating in the Study.

1.69 “**Sample Testing**” means the analyses to be performed by each Party using the applicable Samples, as described in the Data Sharing and Sample Testing Schedule.

1.70 “**Sample Testing Results**” means those results arising from the Sample Testing which are to be shared between Merck and Vaccinex, as set forth in the Data Sharing and Sample Testing Schedule.

1.71 “**Specifications**” means, with respect to a given Compound, the set of requirements for such Compound as set forth in the Clinical Quality Agreements.

1.72 “**Study**” means Phase 1b/2 Study of VX15/2503 in combination with avelumab in patients with advanced non-small cell lung cancer.

1.73 “**Study Budget**” has the meaning set forth in Section 7.1.

1.74 “**Study Completion**” has the meaning set forth in Section 3.5.

1.75 “**Study Costs**” means the total costs to be incurred by Vaccinex in connection with the Study as set forth in the Study Budget attached hereto as Appendix C, as such Study Budget may be amended in accordance with this Agreement.

1.76 “**Study Indication**” means non-small cell lung cancer (NSCLC).

1.77 “**Study Results**” means the results generated under the Study.

1.78 “**Subcontractors**” has the meaning set forth in Section 2.4.

1.79 “**Team Leader**” has the meaning set forth in Section 3.8.

1.80 “**Term**” has the meaning set forth in Section 6.1.

1.81 “**Termination Costs**” has the meaning set forth in Section 6.13.

1.82 “**Territory**” means anywhere in the world.

Note: Reference to “Merck” in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

1.83 "**Third Party**" means any person or entity other than Vaccinex, Merck or their respective Affiliates.

1.84 "**Vaccinex**" has the meaning set forth in the preamble.

1.85 "**Vaccinex Class Compound**" means any small or large molecule that inhibits Semaphorin 4D ("**SEMA4D**") activity, including an anti-SEMA4D mono-clonal antibody and any other small or large molecule that blocks binding of SEMA4D to its receptors, plexin-B1, plexin-B2 or CD72, and any formulations thereof.

1.86 "**Vaccinex Compound**" means Vaccinex's antibody known as VX15/2503.

1.87 "**Vaccinex Compound Inventions**" has the meaning set forth in Section

1.88 "**Vaccinex Liability**" has the meaning set forth in Section 14.2.1.

2. Scope of the Agreement.

2.1 Each Party shall contribute to the Study such resources as are reasonably necessary to fulfill its obligations set forth in this Agreement.

2.2 Each Party agrees to act in good faith in performing its obligations under this Agreement and each Related Agreement, and shall notify the other Party as promptly as possible in the event of any Manufacturing delay that is likely to adversely affect supply of its Compound as contemplated by this Agreement.

2.3 Each Party shall have the right to subcontract any portion of its obligations hereunder to Third Party subcontractors ("Subcontractors"). Each Party shall remain solely and fully liable for the performance of its Subcontractors. Each Party shall ensure that each of its subcontractors performs its obligations pursuant to the terms of this Agreement, including the Appendices attached hereto. For clarity, to the extent that a Party has an obligation under this Agreement to perform an action or to meet a standard, and such Party subcontracts such obligation, such Party shall be responsible for any failure by such Party's Subcontractor to perform the action or meet the standard. Each Party shall use reasonable efforts to obtain and maintain copies of documents relating to the obligations performed by such Subcontractors that are held by or under the control of such Subcontractors and that are required to be provided to the other Party under this Agreement.

2.4 This Agreement does not create any obligation on the part of Merck to provide Merck Compound for any activities other than the Study, nor does it create any obligation on the part of Vaccinex to provide the Vaccinex Compound for any activities other than the Study.

2.5 Subject to Section 3.10 below, nothing in this Agreement shall (i) prohibit either Party from performing clinical studies other than the Study relating to its own Compound, either individually or in combination with any other compound or product, in any therapeutic area, or (ii) create an exclusive relationship between the Parties with respect to any Compound.

3. Conduct of the Study.

3.1 Notwithstanding anything to the contrary herein, Vaccinex shall act as the sponsor of the Study and shall own and hold the IND and/or CTA, as applicable, for the Study; provided, however, that in no event shall Vaccinex file a separate IND or CTA for the Study unless required by Regulatory Authorities to do so. For clarity, the Parties anticipate that Vaccinex will conduct the Study under Vaccinex's current IND # [***] for the Vaccinex Compound. If a Regulatory Authority requests a separate IND or CTA for the Study the Parties will promptly meet and mutually agree on an approach to address such requirement.

3.2 Vaccinex shall ensure that the Study is performed in accordance with this Agreement, the Protocol and all Applicable Law, including GCP.

3.3 Vaccinex shall ensure that all directions from any Regulatory Authority and/or ethics committee with jurisdiction over the Study are followed. Notwithstanding anything else herein to the contrary, Merck shall fully cooperate with Vaccinex to comply with such directions, including with respect to supply of Merck Compound. Vaccinex shall participate in and lead all discussions with any Regulatory Authority regarding the Study, provided, however, that to the extent practicable (*e.g.* ad hoc conversations with Regulatory Authorities requiring an immediate response will be excluded) and if not prohibited by such Regulatory Authority, Merck shall have the right (but no obligation) to have a representative participate in any discussions with a Regulatory Authority regarding matters related to the Study; provided further that the Parties acknowledge and agree that such right does not apply to discussions regarding general Study matters that are solely related to the Vaccinex Compound. Each Party grants to the other Party a non-exclusive, nontransferable (except in connection with a permitted assignment, sublicense or subcontract) "right of reference" (as defined in US FDA 21 CFR 314.3(b)), or similar "right of reference" as defined in applicable regulations in the relevant part of the Territory (only if possible, i.e., a CTA for the respective Compound was already submitted to the local Health Authorities), with respect to Study Data and results related to Compounds, solely as necessary for the other Party to prepare, submit and maintain regulatory submissions in respect of the Study related to the other Party's Compound and Regulatory Approvals. In all other cases, where a "right of reference" is not possible, the Parties will promptly discuss in good faith and agree on how to provide the required documentation for CTA of the Study. Further, each Party shall provide to the other a cross-reference letter or similar communication to the applicable Regulatory Authority to effectuate such right of reference in form and substance reasonably requested by the other Party. Notwithstanding anything to the contrary in this Agreement, neither Party shall have any license, or right to access the other Party's CMC data with respect to its Compound.

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

Note: Reference to "Merck" in this document refers to the Group of Companies affiliated with Merck KGaA, Darmstadt, Germany.

3.4 Vaccinex shall maintain reports and all related documentation with respect to the Study in good scientific manner and in compliance with Applicable Law. Each Party shall provide to the other all Study information and documentation (excluding information and documentation relating to the Sample Testing other than the Sample Testing Results themselves) reasonably requested by such other Party to enable it to (i) comply with any of its legal and regulatory obligations, or any request by any Regulatory Authority, in each case, to the extent related to the Study or such Party's Compound, (ii) conduct the Sample Testing, (iii) satisfy any contractual obligation to a subcontractor engaged pursuant to Section 2.4 hereof, and (iv) in the case of Merck, determine whether the Study has been performed by Vaccinex in accordance with this Agreement.

3.5 Each Party shall provide to the other Party copies of all Clinical Data to the extent generated by such Party, in an agreed electronic form or other mutually agreeable alternate form, and on the timelines specified in the Data Sharing and Sample Testing Schedule (if applicable) or upon mutually agreeable timelines; provided, however, that Clinical Data shall be provided to Merck no more than [***] or as otherwise mutually agreed by the Parties; and a complete copy of the Clinical Data shall be provided to Merck no later than [***]. Merck shall provide pharmacokinetics and anti-drug antibody data regarding Merck Compound to Vaccinex no less than [***]. "**Study Completion**" shall be deemed to occur upon lock of the Study database in accordance with the Protocol. Vaccinex shall use commercially reasonable efforts to ensure that all patient authorizations and consents required under HIPAA, the EU Data Protection Directive 95/46/EC or subsequent revised versions thereof or any other similar Applicable Law of the United States in connection with the Study permit such sharing of Clinical Data with Merck. Vaccinex shall provide Samples to Merck as specified in the Protocol or as agreed to by the JCSC. Each Party shall use the Samples only for the Sample Testing and each Party shall be responsible for conducting the Sample Testing as set forth on the Data Sharing and Sample Testing Schedule, including all expenses related thereto. Merck shall own all data arising from the Sample Testing conducted by or on behalf of Merck. Merck shall provide to Vaccinex the Sample Testing Results for the Sample Testing conducted by or on behalf of Merck, in electronic form or other mutually agreeable alternate form, and on the timelines specified in the Data Sharing and Sample Testing Schedule or other mutually agreed timelines. Likewise, Vaccinex shall own all data arising from the Sample Testing conducted by or on behalf of Vaccinex. Vaccinex shall provide to Merck the Sample Testing Results for the Sample Testing conducted by or on behalf of Vaccinex, in electronic form or other mutually agreeable alternate form, and on the timelines specified in the Data Sharing and Sample Testing Schedule or other mutually agreed timelines. Except to the extent otherwise agreed in writing signed by authorized representatives of each Party, prior to publication or other public disclosure permitted under this Agreement, each Party shall use or disclose the other Party's Sample Testing Results only for the purposes of the Permitted Use. For clarity, after the publication of a particular item of the other Party's Sample Testing Results/Clinical Data in compliance with and as permitted under Section 12 of this Agreement, the Parties are permitted to use or disclose such published information.

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3.6 All Clinical Data, including raw data and results, generated under this Agreement shall be jointly owned by Vaccinex and Merck. It is understood and acknowledged by the Parties that each Party or the Parties together, at their sole discretion, shall have the right to use Clinical Data to obtain the original label or label changes for the Compounds for the Study Indication as described in the Protocol. In such event, the Parties will enter into good faith negotiations to determine a regulatory submission strategy for the Compounds, and, at their sole discretion, cost sharing of the next part of the Study and/or future study(ies) that may be needed for regulatory submission for the Compounds. Prior to the publication of a particular item of Clinical Data pursuant to Section 12 or other public disclosure permitted under this Agreement or as otherwise agreed by the Parties, neither Party shall use or disclose such Clinical Data other than for the Permitted Use, except to the extent otherwise agreed in writing signed by authorized representatives of each Party. For clarity, after the publication of a particular item of the other Party's Sample Testing Results/Clinical Data in compliance with and as permitted under Section 12 of this Agreement, the Parties are permitted to use or disclose such published information.

3.7 Joint Combination Study Committee. The Parties shall form a joint development team (the "**Joint Combination Study Committee**" or "**JCSC**"), made up of an equal number of representatives of Merck and Vaccinex, which shall have the following responsibility for coordinating the following activities under, and pursuant to, this Agreement:

- Reviewing and approving the Study Protocol and changes thereto for the Compounds in accordance with Section 4.1 of this Agreement;
- Discussing and overseeing regulatory related activities to ensure regulatory compliance and timely management of responses to any regulatory authority queries during regulatory review processes;
- Approving publication strategies for Data arising out of the Study;
- Facilitating the exchange of information in compliance with this Agreement in order to ensure that significant issues concerning adverse event information and safety issues are addressed consistently and in a timely manner;
- Approving amendment of Study Budget;
- Approving any material deviations in the Study Costs from the original estimate that represent an aggregate increase or decrease of more than [***] between the actual Study Costs incurred and the estimated Study Costs for such Calendar Quarter as set forth in the Study Budget; and
- Reviewing and approving all Study reports in accordance with Section 3.9 and 12 of this Agreement.

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Merck and Vaccinex shall each designate a Team Leader (the "**Team Leader**") who shall be responsible for implementing and coordinating activities, and facilitating the exchange of scientific information between the Parties with respect to the Study. The JCSC shall be chaired by one of the Team Leaders. The JCSC chair shall rotate in the following order: 2016 -2017 Vaccinex, 2018 Merck, 2019 Vaccinex. Other JCSC members will be selected by each Party with an equal number of representatives of Merck and Vaccinex. The JCSC shall meet as soon as practicable after the Effective Date and then no less than twice yearly, and more often as reasonably considered necessary at the reasonable request of either Party, to provide an update on Study progress. Each Party shall be responsible for its expenses, including travel costs incurred for attending meetings of the JCSC. The JCSC may meet in person or by means of teleconference, Internet conference, videoconference or other similar communications equipment. In the event the JCSC agrees to meet in person, the geographical location of such meeting shall be decided by either Party at its own discretion rotating in the following order: 1st Vaccinex, 2nd Merck, and then back to Vaccinex and the rotating order above-described. One week prior to any such meeting, the Vaccinex Team Leader shall provide an update in writing to Merck Team Leader, which update shall contain information about overall Study progress, recruitment status, interim analysis (if results are available), final analysis and other information relevant to the conduct of the Study. Merck and Vaccinex will appoint a compliance representative who will be an ad-hoc member of the JCSC and who will sign-off all JCSC meeting minutes.

Immediately after the Effective Date, Merck and Vaccinex shall each appoint a person who possesses a general understanding of this Agreement and of matters relating to the development of the Compounds to act as manager (each a "**Manager**"), who shall oversee interactions between the Parties between meetings of the JCSC. The role of Manager is to act as a key point of contact between the Parties to facilitate a successful collaboration hereunder and to facilitate a successful resolution of deadlocks or disputes that may arise hereunder. Managers shall attend all JCSC meetings on an agenda driven basis and may bring to the attention of the JCSC any matters or issues either of them reasonably believes should be discussed, and shall have such other responsibilities as the Parties may mutually agree in writing. Each Party may in its sole discretion replace its Manager at any time by notice in writing to the other Party.

In the event that an issue arises and the Managers cannot or do not, after good faith efforts, reach agreement on such issue, the issue shall be elevated to the [***] of Merck (or his or her delegate) and the [***] for Vaccinex (or his or her delegate).

3.8 Within [***], Vaccinex shall provide Merck with an electronic draft of the Study report for Merck to provide comments to Vaccinex. Vaccinex shall consider in good faith any comments provided by Merck on the draft of the Study report, provided that such comments are received by Vaccinex within [***] after Merck's receipt of such draft Study report. Vaccinex shall provide Merck with the final version of the Study report promptly following such review and comment period of the draft Study report by Merck.

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3.9 Exclusivity until DEP Completion.

(a) Commencing on the Effective Date and ending on DEP Completion, Vaccinex agrees that it shall not initiate, nor permit any Third Party to initiate any clinical study in which the Vaccinex Compound is tested in humans in combination with any small or large molecule that inhibits PD-L1 activity directly, including an anti-PD-L1 (programmed death-ligand 1) mono-clonal antibody, for the treatment of any Indication, without the express prior written consent of Merck. For the avoidance of doubt, such exclusivity does not apply to small or large molecules that inhibit activity of PD-1 directly, including an anti-PD-1 antibody.

(b) Commencing on the Effective Date and ending on DEP Completion, Merck agrees that it shall not initiate, nor permit any Third Party to initiate any clinical study in which the Merck Compound is tested in humans in combination with any small or large molecule that inhibits SEMA4D activity directly, including an anti-SEMA4D mono-clonal antibody, for the treatment of any Indication, without the express prior written consent of Vaccinex. For the avoidance of doubt, such exclusivity does not apply to small or large molecules that inhibit activity of plexin-B1 directly, including an anti-plexin-B1 antibody.

3.10 Exclusivity until Study Completion.

(a) Commencing on the Effective Date and ending on the Study Completion, Vaccinex agrees that it shall not initiate, nor permit any Third Party to initiate any clinical study, in which the Vaccinex Compound is tested in humans in combination with a Merck Class Compound other than the Merck Compound, for the treatment of the Study Indication, without the express prior written consent of Merck. If Merck and Vaccinex agree to a Study which covers additional Indications other than the first Study Indication, then the foregoing exclusivity in favor of Merck shall apply to such additional Indication; provided, that Vaccinex has not already initiated a combination study with another Merck Class Compound in that Indication.

(b) Commencing on the Effective Date and ending on the Study Completion, Merck agrees that it shall not initiate, nor permit any Third Party to initiate any clinical study in which the Merck Compound is tested in humans in combination with a Vaccinex Class Compound other than the Vaccinex Compound, for the treatment of the Study Indication, without the express prior written consent of Vaccinex. If Merck and Vaccinex agree to a Study which covers additional Indications other than the first Study Indication, then the foregoing exclusivity in favor of Vaccinex shall apply to such additional Indication; provided, that Merck has not already initiated a combination study with another Vaccinex Class Compound in that Indication.

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3.11 Each Party acknowledges and agrees that the other Party may have present or future business activities or opportunities, including business activities or opportunities with Third Parties, involving Merck Compound, in the case of Merck, or the Vaccinex Compound, in the case of Vaccinex, or other similar products, programs, technologies or processes. Accordingly, but subject to Sections 3.10 and 3.11, each Party acknowledges and agrees that nothing in this Agreement shall be construed as a representation or inference that the other Party will not develop for itself, or enter into business relationships with other Third Parties regarding, any products, programs, studies (including combination studies), technologies or processes that are similar to or that may compete with the Combination or any other product, program, technology or process, provided that any unpublished Clinical Data, Sample Testing Results, Jointly Owned Inventions, and any other Confidential Information of the other Party is not used or disclosed in connection therewith in violation of Sections 3.6, 3.7, 9.1 or 10 (as applicable) of this Agreement.

3.12 Nothing in this Agreement shall prohibit or restrict a Party from licensing, assigning or otherwise transferring to an Affiliate or Third Party its Compound and the related Clinical Data, Confidential Information, Sample Testing Results or Jointly Owned Inventions; provided, however, that in the case of any such license, assignment or transfer, the licensee, assignee or transferee shall agree in writing to use such Clinical Data, Confidential Information, Sample Testing Results or Jointly Owned Inventions subject to the terms and conditions of this Agreement.

4. Protocol and Related Documents.

4.1 A summary of the initial Protocol, entitled “Phase 1b/2 Study of VX15/2503 in combination with avelumab in patients with advanced non-small cell lung cancer”, has been agreed to by the Parties as of the Effective Date, and is attached as Appendix A. Vaccinex and Merck shall agree on the contents of the Protocol; any changes to the Protocol that would require the approval of a Regulatory Authority or Institutional Review Board shall require prior written approval of all Parties. The contents of the Protocol and any proposed changes to the Protocol will be sent in writing to Merck’s Team Leader and Merck’s Manager. In the event that the Parties cannot agree in writing on the final Protocol, the matter shall be elevated in accordance with Section 3.8 for final resolution. In the event that the Managers cannot reach agreement on changes or amendments to the Protocol after elevating the matter in accordance with Section 3.8, Vaccinex shall have the final decision on any Protocol amendments solely related to the dosing of Vaccinex Compound, and Merck shall have the final decision on any Protocol amendments solely related to the dosing of Merck Compound. For clarity, Vaccinex may implement any change to the Protocol that would not require the approval of a Regulatory Authority or Institutional Review Board; provided, that Vaccinex gives prompt notice thereof to Merck.

4.2 Vaccinex shall prepare the patient informed consent forms for the Study (which shall include any required consent for the Sample Testing and sharing of patient data with Merck) in consultation with Merck (it being understood and agreed that the portion of the informed consent form relating to Merck Compound will be provided to Vaccinex by Merck). Any changes to such form that relate to the Sample Testing or Merck Compound or the sharing of data shall be subject to Merck’s review and prior written consent to be provided to Vaccinex in a timely manner. Any such proposed changes will be sent in writing to Merck’s Team Leader and Merck’s Manager.

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5. Adverse Event Reporting.

Vaccinex will be solely responsible for compliance with all Applicable Law pertaining to safety reporting for the Study and related activities. The Parties shall execute the Safety Data Exchange Agreement in a format mutually agreed by the Parties, to ensure the exchange of relevant safety data within appropriate timeframes and in an appropriate format to enable the Parties to fulfill local and international regulatory reporting obligations and to facilitate appropriate safety reviews. Copies of all Serious Adverse Event (SAE) and adverse event reports and other information arising from any aspect of the Study where a patient has been exposed to Merck Compound will be sent to Merck in accordance with the Safety Data Exchange Agreement.

6. Term and Termination.

6.1 The term of this Agreement shall commence on the Effective Date and shall continue in full force and effect until completion of all of the obligations of the Parties hereunder or until terminated by either Party pursuant to this Article 6 (the "Term").

6.2 In the event that Merck reasonably and in good faith believes that Merck Compound is being used in the Study in an unsafe manner and notifies Vaccinex in writing of the grounds for such belief, and Vaccinex fails to promptly incorporate (subject to approval by applicable Regulatory Authorities or Institutional Review Boards) changes into the Protocol reasonably and in good faith requested by Merck to address such issue or to otherwise reasonably and in good faith address such issue, Merck may terminate this Agreement and the supply of Merck Compound effective upon written notice to Vaccinex.

6.3 Subject to Section 6.11, either Party may terminate this Agreement if the other Party commits a material breach of this Agreement, and such material breach continues for [***] days after receipt of written notice thereof from the non-breaching Party; provided, that if such material breach is capable of cure and cannot reasonably be cured within [***] days, the breaching Party shall be given a reasonable period of time to cure such breach.

6.4 If either Party reasonably determines in good faith, based on a review of the Clinical Data or other Study-related Know-How or other information, that the Study may unreasonably affect patient safety, such Party shall promptly notify the other Party of such determination. The Party receiving such notice may propose modifications to the Study to address the safety issue identified by the other Party and, if the notifying Party agrees, shall act to immediately implement such modifications; provided, however, that if either Party, in its sole discretion, reasonably and in good faith believes that there is imminent danger to patients, such

Party need not wait for the other Party to propose modifications and may instead terminate this Agreement immediately upon written notice to such other Party. Furthermore, if the notifying Party, in its sole discretion, reasonably and in good faith believes that any modifications proposed by the other Party will not resolve the patient safety issue, such Party may terminate this Agreement effective upon written notice to such other Party.

6.5 Either Party may terminate this Agreement immediately upon written notice to the other Party in the event that (a) any Regulatory Authority takes any action, or raises any objection, that prevents the terminating Party from supplying its Compound for purposes of the Study or (b) it determines in its sole discretion to discontinue all development of its Compound for material safety, medical, scientific, legal, or regulatory reasons.

6.6 In the event that this Agreement is terminated, Vaccinex shall, at Merck's sole discretion, promptly either return or destroy all unused Merck Compound pursuant to Merck's instructions. If Merck requests that Vaccinex destroy the unused Merck Compound, Vaccinex shall provide written certification of such destruction.

6.7 Subject to Section 6.11, either Party shall be entitled to terminate this Agreement upon thirty (30) days advance written notice to the other Party, if such other Party fails to perform any of its obligations under Section 13.2 or breaches any representation or warranty contained in Section 13.2, and such failure or breach is not cured within thirty (30) days of the receipt of written notice thereof. Subject to Section 6.9, the non-terminating Party shall have no claim against the terminating Party for compensation for any loss of whatever nature solely by virtue of the termination of this Agreement in accordance with this Section 6.7.

6.8 **[**The provisions of this Section 6.8 and Sections 3.6 (other than the first, fourth and sixth sentences thereof), 3.7, 3.9, 6.6, 6.7 (other than the first sentence thereof), 6.9, 6.10, 6.11, 13.2, 13.3.5, 13.4, 14.2 (Indemnification), 14.3 (Limitation of Liability), and Articles 1 (Definitions), 7 (Costs of Study), 9 (Confidentiality), 10 (Intellectual Property), 11 (Reprints; Rights of Cross-Reference), 12 (Press Releases and Publications), 20 (No Additional Obligations), 21 (Dispute Resolution and Jurisdiction), 22 (Notices), 23 (Relationship of the Parties) and 25 (Construction) shall survive the expiration or termination of this Agreement.**]**

6.9 Subject to Section 6.11, termination of this Agreement shall be without prejudice to any claim or right of action of either Party against the other Party for any prior breach of this Agreement.

6.10 Upon termination of this Agreement, each Party and its Affiliates shall promptly return to the other Party or destroy any Confidential Information of the other Party (other than Clinical Data, Sample Testing Results and Inventions) furnished to the receiving Party by the other Party, except that the receiving Party shall have the right to retain one copy solely for record-keeping purposes which shall remain subject to the confidentiality and non-use provisions set forth herein.

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6.11 Upon receipt by either Party of a termination notice of this Agreement, subject to the terms of this Article 6, Vaccinex shall submit a wind-down plan to Merck, setting forth the tasks reasonably necessary or required in connection with the orderly termination of the Study and the proper plan for managing the patients enrolled in the Study, including any actions reasonably required to safely close out the Study, or required by Applicable Laws. If patient safety considerations require more time to safely close out the Study than the termination periods set forth herein, then the Parties agree that the Agreement shall be extended to the extent necessary to ensure patient safety, after which the Agreement shall terminate immediately in accordance with the terms of the applicable section in this Article 6.

6.12 All costs associated with a termination of this Agreement, including costs related to the wind-down plan contemplated by Section 6.11 (collectively, "**Termination Costs**"), shall be handled as follows:

(a) In the event of a termination by Merck pursuant to Sections 6.2, 6.3, or 6.7, or a termination by Vaccinex pursuant to Section 6.5(b), Vaccinex shall be responsible for all Termination Costs.

(b) In the event of a termination by Vaccinex pursuant to Sections 6.3 or 6.7, or a termination by Merck pursuant to Section 6.5(b), Merck shall be responsible for all Termination Costs, with Merck reimbursing Vaccinex for all such Termination Costs, on a Calendar Quarter basis, as set forth in Article 7.

(c) In the event of a termination by either Party pursuant to Sections 6.4 or 6.5(a), the Termination Costs will be shared equally by Vaccinex and Merck, with Merck reimbursing [***]% of all such Termination Costs, on a Calendar Quarter basis, as set forth in Article 7.

7. Costs of Study.

7.1 The Parties agree that (i) Merck shall provide Merck Compound for use in the Study, as described in Article 8 below, at no cost to Vaccinex; and (ii) Vaccinex shall provide the Vaccinex Compound for use in the Study, as described in Article 8 below, at no cost to Merck. The Study Costs set forth in the Study Budget will be [***] by Vaccinex and Merck up to a maximum of US$[***] in Study Costs (the "Study Costs Reimbursement Cap"), with Merck reimbursing [***]% of all such Study Costs incurred, up to [***]% of the Study Costs Reimbursement Cap, on a Calendar Quarter basis, as set forth in this Article 7. A good faith estimate of the total expected Study Costs as of the Effective Date is attached hereto as Appendix C (the "**Study Budget**"), which Study Budget may be amended from time to time by mutual agreement of the JCSC or the Parties. Within [***] of the end of each Calendar Quarter Vaccinex shall provide Merck an invoice, in reasonable detail, setting forth the incurred Study Costs, on the basis of the estimated Study Costs for such Calendar Quarter. Within [***] following receipt of each such invoice by Merck, Merck shall reimburse Vaccinex for [***]% of

the total Study Costs incurred by Vaccinex during such Calendar Quarter. Concurrently with each such Calendar Quarter invoice, Vaccinex shall describe in writing any material deviations in the Study Costs from the original estimate that represent an aggregate increase or decrease of more than [***] between the actual Study Costs incurred and the estimated Study Costs for such Calendar Quarter as set forth in the Study Budget. Provided that the Parties have agreed to such deviations of more than [***] in a JCSC meeting, Merck shall pay [***]% of any such additional costs and the original Study Costs estimate shall be adjusted accordingly (i.e., an aggregate increase or decrease of more than [***] between the actual Study Costs incurred and the estimated Study Costs for such Calendar Quarter as set forth in the Study Budget. For clarity, [***].

7.2 For the avoidance of doubt, Vaccinex will not be required to reimburse Merck for any costs or expenses incurred by Merck or its Affiliates in connection with the Study and Merck will not be required to reimburse Vaccinex for any costs or expenses incurred by Vaccinex or its Affiliates in connection with the Study (other than the Study Costs).

7.3 Except with respect to the Study Costs or as expressly set forth in Article 6, the Parties agree that:

(a) (i) Merck shall provide Merck Compound for use in the Study, as described in Article 8 below, at no cost to Vaccinex; and (ii) Vaccinex shall bear all other costs associated with the conduct of the Study, including that Vaccinex shall provide the Vaccinex Compound for use in the Study, as described in Article 8 below, at no cost to Merck; and

(b) Vaccinex will not be required to reimburse Merck for any costs or expenses incurred by Merck or its Affiliates in connection with the Study and Merck will not be required to reimburse Vaccinex for any costs or expenses incurred by Vaccinex or its Affiliates in connection with the Study.

8. Supply and Use of the Compounds.

8.1 *Supply of the Compounds*.

(a) Vaccinex and Merck will each supply, or cause to be supplied, the quantities of its respective Compound set forth on Appendix B on the timelines set forth in Appendix B, in each case, for use in the Study. In the event that Vaccinex determines that the quantities of Compounds set forth on Appendix B are not sufficient to complete the Study (due, for example, to the addition of Study sites or countries), Vaccinex shall so notify Merck, and the Parties shall discuss in good faith regarding additional quantities of Compounds to be provided and the schedule on which such additional quantities may be provided. Each Party shall also provide to the other Party a contact person for the supply of its Compound under this Agreement. Notwithstanding the foregoing, or anything to the contrary herein, in the event that either Party is not supplying its Compound in accordance with the terms of this Agreement, or is allocating under Section 8.10, then the other Party shall have no obligation to supply its Compound, or may allocate its Compound proportionally to the Study.

(b) At the Completion of the Study, subject to Section 3.7, each of Vaccinex and Merck will have the right to continue combination trials involving its Compound and the other Party's Compound without the agreement of the other Party in the Study Indication including exploring one new Indication (a "**New Trial**"), as long as there is no good faith objection from the other Party based on bona fide safety or supply issues. The Party who is not the continuing Party will, subject to supply availability, provide its Compound to the other Party at [***]. If either Vaccinex or Merck elect to continue a New Trial, the Parties will mutually agree on an amendment to this Agreement addressing matters related to the New Trial, such as a license to use the other Party's Compound for non-commercial purposes, solely to conduct the trial, and any inflationary adjustments to Manufacturing Cost that may reasonably be requested by the Party supplying its Compound. Any such amendment will be consistent with the terms of this Agreement to the greatest extent possible.

8.2 *Minimum Shelf Life Requirements*. Each Party shall supply its Compound hereunder with an adequate remaining shelf life at the time of Delivery to meet the Study requirements. The shelf life for each Compound to continue to be conforming and meet Specifications shall at a minimum be [***] from the time of Delivery; provided, that the Compound is handled and stored according to the specified handling and storage conditions.

8.3 *Provision of Compounds*.

8.3.1 Merck will deliver Merck Compound to Vaccinex [***] with respect to such Merck Compound. Title and risk of loss for Merck Compound shall transfer from Merck to Vaccinex at Delivery. All costs associated with the subsequent transportation, warehousing and distribution of Merck Compound shall be paid by [***] and considered Study Costs. Vaccinex will, or will cause its designee to: (i) take delivery of Merck Compound supplied hereunder; (ii) perform the acceptance procedures allocated to it under the Clinical Quality Agreements; (iii) subsequently label and pack (in accordance with Section 8.4) and ship Merck Compound to the Study sites as required by the Study, in compliance with cGMP, GCP and other Applicable Law and the Clinical Quality Agreements; and (iv) provide, from time to time at the reasonable request of Merck, the following information with respect to Merck Compound shipped by Vaccinex: any applicable chain of custody forms; in-transport temperature recorder(s); records and receipt verification documentation; such other transport or storage documentation as may be reasonably requested by Merck (to the extent within Vaccinex's possession or control); and usage and inventory reconciliation documentation related to Merck Compound.

8.3.2 Vaccinex is solely responsible, at its own cost, for supplying (including all Manufacturing, acceptance and release testing) the Vaccinex Compound for the Study, and the subsequent handling, storage, transportation, warehousing and distribution of the Vaccinex Compound supplied hereunder. Vaccinex shall ensure that all such activities are conducted in

compliance with cGMP, GCP and other Applicable Law and the Clinical Quality Agreements. For purposes of this Agreement, the delivery of a given quantity of the Vaccinex Compound shall be deemed to occur when such quantity is delivered to a Study site, provided that all expenses paid by Vaccinex following delivery of the Vaccinex Compound to the Vaccinex DDP shall be deemed Study Costs.

8.4 *Labeling and Packaging; Use, Handling and Storage.*

8.4.1 The Parties' obligations with respect to the labeling and packaging of the Compounds are as set forth in the Clinical Quality Agreements. Notwithstanding the foregoing or anything to the contrary contained herein, Merck shall provide Merck Compound to Vaccinex in the form of released unlabeled vials, and Vaccinex shall be responsible for labeling, packaging and leafleting such Merck Compound in accordance with the terms and conditions of the Clinical Quality Agreements and otherwise in accordance with all Applicable Law, including cGMP, GCP, and health, safety and environmental protections. Labeling, packaging, and leafleting of Merck Compound and Vaccinex Compound shall be considered Study Costs and shall be handled in accordance with Section 7.1.

8.4.2 Vaccinex shall (i) use Merck Compound solely for purposes of performing the Study; (ii) not use Merck Compound in any manner inconsistent with this Agreement or for any commercial purpose other than conduct of the Study; and (iii) use, store, transport, handle and dispose of Merck Compound in compliance with Applicable Law and the Clinical Quality Agreements. Vaccinex shall not reverse engineer, reverse compile, disassemble or otherwise attempt to derive the composition or underlying information, structure or ideas of Merck Compound, and in particular shall not analyze Merck Compound by physical, chemical or biochemical means except as necessary to perform its obligations under the Clinical Quality Agreements.

8.5 *Product Specifications.* A certificate of analysis shall accompany each shipment of Merck Compound to Vaccinex. Upon request, Vaccinex shall provide Merck with a certificate of analysis covering each lot of Vaccinex Compound used in the Study.

8.6 *Changes to Manufacturing.* Each Party may make changes from time to time to its Compound or the Manufacturing Site; provided that such changes shall be in accordance with the Clinical Quality Agreements.

8.7 *Product Testing; Noncompliance*.

8.7.1 After Manufacturer's Release. After Manufacturer's Release of Merck Compound and concurrently with Delivery of the Compound to Vaccinex, Merck shall provide Vaccinex with such certificates and documentation as are described in the Clinical Quality Agreements ("**Disposition Package**"). Vaccinex shall, within the time defined in the Clinical Quality Agreements, perform (i) with respect to Merck Compound, the acceptance procedures

allocated to it under the Clinical Quality Agreements, and (ii) with respect to the Vaccinex Compound, the testing and release procedures allocated to it under the Clinical Quality Agreements. Vaccinex shall take all steps necessary in its reasonable discretion to determine that Vaccinex Compound is suitable for release from its manufacturing site and that Merck Compound and Vaccinex Compound are suitable for release from Vaccinex Packaging and Labeling Contractor Site before making such Merck Compound or Vaccinex Compound, as applicable, available for human use, and Merck shall provide cooperation or assistance as reasonably requested by Vaccinex in connection with such determination with respect to Merck Compound. Vaccinex shall be responsible for (a) storage and maintenance of Merck Compound until it is released from Vaccinex Packaging and Labeling Contractor Site, which storage and maintenance shall be in compliance with the Specifications for Merck Compound, the Clinical Quality Agreements and Applicable Law; and (b) any failure of Merck Compound to meet the Specifications to the extent caused by shipping, storage or handling conditions after Delivery to Vaccinex hereunder.

8.7.2 Non-Conformance.

(a) In the event that either Party becomes aware that any Compound may have a Non-Conformance, despite testing and quality assurance activities (including any activities conducted by the Parties under Sections 8.7.1 (*After Manufacturer's Release*)), such Party shall immediately notify the other Party in accordance with the procedures of the Clinical Quality Agreements. The Parties shall investigate any Non-Conformance in accordance with Section 8.9 (*Investigations*) and any discrepancy between them shall be resolved in accordance with Section 8.8 (*Resolution of Discrepancies*).

(b) In the event that any proposed or actual shipment of Merck Compound (or portion thereof) shall be agreed to have a Non-Conformance at the time of Delivery to Vaccinex or during the shelf life set forth in Section 8.2 (in either case, a "**Non-Conformance Event**"), then unless otherwise agreed to by the Parties, Merck shall replace such Merck Compound as is found to have a Non-Conformance (with respect to Merck Compound that has not yet been administered in the course of performing the Study). Unless otherwise agreed to by the Parties in writing, the sole and exclusive remedies of Vaccinex with respect to any Merck Compound that is found to have a Non-Conformance at the time of Delivery shall be (i) replacement of such Merck Compound as set forth in this Section 8.7.2(b), (ii) indemnification under Section 14.2 (to the extent applicable) and (iii) termination of this Agreement pursuant to Section 6.3 or 6.7 (to the extent applicable, but subject to the applicable cure periods set forth therein); provided, for clarity, that Vaccinex shall not be deemed to be waiving any rights under Section 8.15.

(c) In the event that Merck Compound is lost or damaged after Delivery, Merck may provide additional Merck Compound to Vaccinex, if available for the Study. Such replaced Merck Compound shall be provided to Vaccinex, so long as the amount replaced does not in the aggregate exceed [***] of the total quantity of Merck Compound to be provided by Merck pursuant to Appendix B (such amount set forth on Appendix B, the "**Replacement**

Threshold"). Vaccinex shall pay Merck the Manufacturing Costs per vial of any replaced Merck Compound beyond the Replacement Threshold which Merck agrees to supply; provided that the Manufacturing Cost per vial of Merck Compound charged by Merck pursuant to this Section 8.7.2(b) shall not exceed US$[***]. For the avoidance of doubt, except as provided in this Section 8.7.2(c), Merck shall have no obligation to provide replacement Merck Compound for any Merck Compound supplied hereunder other than such Merck Compound as has been agreed or determined to have a Non-Conformance at the time of Delivery to Vaccinex.

(d) Merck shall be responsible for any costs incurred by Vaccinex in connection with the return or destruction of any Merck Compound supplied hereunder that is found to have a Non-Conformance caused by Merck.

(e) Vaccinex shall be responsible for, and Merck shall have no obligations or liability with respect to, any Vaccinex Compound supplied hereunder that is found to have a Non-Conformance. Vaccinex shall replace any Vaccinex Compound as is found to have a Non-Conformance (with respect to Vaccinex Compound that has not yet been administered in the course of performing the Study). Unless otherwise agreed to by the Parties in writing, the sole and exclusive remedies of Merck with respect to any Vaccinex Compound that is found to have a Non-Conformance at the time of Delivery shall be (i) replacement of such Vaccinex Compound as set forth in this Section 8.7.2(c), (ii) indemnification under Section 14.2 (to the extent applicable) and (iii) termination of this Agreement pursuant to Section 6.3 or 6.7 (to the extent applicable, but subject to the applicable cure periods set forth therein); provided, for clarity, that Merck shall not be deemed to be waiving any rights under Section 8.15.

8.8 *Resolution of Discrepancies*. Disagreements regarding any determination of Non-Conformance by Vaccinex shall be resolved in accordance with the provisions of the Clinical Quality Agreements.

8.9 *Investigations*. The process for investigations of any Non-Conformance shall be handled in accordance with the Clinical Quality Agreements.

8.10 *Shortage; Allocation*. In the event that a Party's Compound is in short supply as a result of a manufacturing disruption, manufacturing difficulties or other similar event such that a Party reasonably believes in good faith that it will not be able to fulfill its supply obligations hereunder with respect to its Compound, such Party will provide prompt written notice to the other Party thereof (including the shipments of Compound hereunder expected to be impacted and the quantity of its Compound that such Party reasonably determines it will be able to supply) and the Parties will promptly discuss such situation (including how the quantity of Compound that such Party is able to supply hereunder will be allocated within the Study). In such event, the Party experiencing such shortage shall (i) use its commercially reasonable efforts to remedy the situation giving rise to such shortage and to take action to minimize the impact of the shortage on the Study, and (ii) allocate to the other Party an amount of Compound at least proportionate to the total amount of the Compound shipments hereunder expected to be impacted by the shortage divided by the total demand for the Compound for the impacted time period.

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8.11 *Records.* Each Party shall maintain complete and accurate records in all material respects pertaining to its Manufacture of its Compound supplied hereunder, and, upon the reasonable prior request of the other Party, will make such records available to review by such other Party in accordance with the Clinical Quality Agreements solely for the purpose of confirming such Party's compliance with this Agreement with respect to its Manufacturing obligations hereunder.

8.12 *Quality.* Quality matters related to the Manufacture of the Compounds shall be governed by the terms of the Clinical Quality Agreements in addition to the relevant quality provisions of this Agreement.

8.13 *Quality Control*. Each Party shall implement and perform operating procedures and controls for sampling, stability and other testing of its Compound, and for validation, documentation and release of its Compound and such other quality assurance and quality control procedures as are required by the Specifications, cGMPs and the Clinical Quality Agreements.

8.14 *Audits and Inspections.* The Parties' audit and inspection rights under this Agreement shall be governed by the terms of the Clinical Quality Agreements.

8.15 *Recalls.* Recalls of the Compounds shall be governed by the terms of the Clinical Quality Agreements.

8.16 *VAT and other indirect taxes.* All payments under the Agreement are deemed exclusive of VAT or any other indirect taxes; The invoicing Party shall, if required under applicable laws and regulations, add VAT or any other indirect taxes to the price at the prevailing rate under applicable laws and regulations; the invoicing Party shall also fulfill all material and formal conditions required from the invoicing Party under applicable laws & regulations to ensure a refund of the VAT or any other indirect taxes charged to the invoiced Party provided a refund is available to the invoiced Party under applicable laws & regulations.

8.17 Withholding Taxes. The amounts payable by one Party (the "**Payer**") to another Party (the "**Payee**") pursuant to this Agreement ("**Payments**") shall not be reduced on account of any Taxes unless required by Applicable Law. The Payee alone shall be responsible for paying any and all Taxes (other than withholding Taxes required to be paid by the Payer) levied on account of, or measured in whole or in part by reference to, any Payments it receives. The Payer shall deduct or withhold from the Payments any Taxes that it is required by Applicable Law to deduct or withhold. Notwithstanding the foregoing, if the Payee is entitled under any applicable Tax treaty to a reduction of rate of, or the elimination of, or recovery of, applicable withholding Tax, it shall promptly deliver to the Payer or the appropriate governmental body (with the assistance of the Payer to the extent that this is reasonably required and is expressly requested in

writing) the prescribed forms necessary to reduce the applicable rate of withholding or to relieve the Payer of its obligation to withhold Tax, and the Payer shall apply the reduced rate of withholding, or dispense with the withholding, as the case may be. If, in accordance with the foregoing, the Payer withholds any amount, it shall make timely payment to the proper Taxing authority of the withheld amount, and send to the Payee reasonable proof of such payment within 60 days following that payment. If Taxes are paid to a tax authority, each Party will provide the other such assistance as is reasonably requested in accordance with Applicable Law.

9. Confidentiality.

9.1 Subject to Section 13.3.7, Vaccinex and Merck agree to hold in confidence any Confidential Information provided by the other Party, and neither Party shall use Confidential Information of the other Party except for the performance of the Study and for the Permitted Use. Neither Party shall, without the prior written permission of the other Party, disclose any Confidential Information of the other Party to any Third Party, except to such Party's directors, officers, employees, consultants and/or agents who have a need to know such Confidential Information for the purpose of this Agreement and are bound to maintain the confidentiality of the Confidential Information by written obligations of confidentiality and non-use at least as restrictive as the obligations contained herein. Notwithstanding the foregoing, nothing herein shall prohibit any disclosure to the extent such disclosure (i) is required by Applicable Law; (ii) is pursuant to the terms of this Agreement; or (iii) is necessary for the conduct of the Study, and in each case ((i) through (iii)) provided that the disclosing Party shall provide reasonable advance notice to the other Party before making such disclosure and, at the request of such other Party, cooperate with such other Party in obtaining a protective order or similar relief that prevents or limits the scope of, or delays, such disclosure. For the avoidance of doubt, Vaccinex may, without Merck's consent, disclose Confidential Information to clinical trial sites, CROs and clinical trial investigators performing the Study, other vendors (including Subcontractors) directly working on the Study, the data safety monitoring and advisory board relating to the Study, and Regulatory Authorities working with Vaccinex on the Study, in each case to the extent necessary for the performance of the Study and provided that such persons (other than governmental entities) are bound by an obligation of confidentiality at least as stringent as the obligations contained herein.

9.2 Notwithstanding the foregoing, (i) Inventions that constitute Confidential Information and are jointly owned by the Parties shall constitute the Confidential Information of both Parties and each Party shall have the right to use and disclose such Confidential Information only as consistent with Articles 10, 11 and 12; (ii) Inventions that constitute Confidential Information and are solely owned by one Party shall constitute the Confidential Information of that Party and each Party shall have the right to use and disclose such Confidential Information only as consistent with Articles 10, 11 and 12; (iii) use and disclosure of Sample Testing Results shall be governed by Section 3.6 and 10, and (iv) use and disclosure of Clinical Data shall be governed by Section 3.7 and 10.

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9.3 All Confidential Information containing personal identifiable data shall be handled in accordance with all data protection and privacy laws, rules and regulations applicable to such Party.

10. Intellectual Property.

10.1 *Joint Ownership and Prosecution.*

10.1.1 Subject to Sections 10.2 and 10.3, all rights to all Inventions relating to or covering the combined use of the Vaccinex Compound and Merck Compound (each a "**Jointly Owned Invention**") shall be owned jointly by Vaccinex and Merck. For those countries where a specific license is required for a joint owner of a Jointly Owned Invention to practice such Jointly Owned Invention in such countries, (i) Merck hereby grants to Vaccinex a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license, transferable and sublicensable, under Merck's right, title and interest in and to all Jointly Owned Inventions to use such Inventions for any use, and (ii) Vaccinex hereby grants to Merck a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license, transferable and sublicensable, under Vaccinex's right, title and interest in and to all Jointly Owned Inventions to use such Inventions for any use, in each case subject to the restrictions in Article 3 and this Article 10. Unless otherwise mutually agreed, each Party shall have the right to freely exploit each Jointly Owned Invention, both within and outside the scope of the Study, without accounting to or any other obligation to the other Party, and each Party may grant licenses (with a right to sublicense) to Third Parties under such Party's interest in each Jointly Owned Invention, in each case subject to the restrictions in Article 3 and this Article 10. For clarity, (i) the terms of this Agreement do not provide Vaccinex or Merck any rights to use or commercialize the other Party's Compound, or with any rights, title or interest or any license to the other Party's background intellectual property except as necessary to conduct the Study and as expressly set forth in Section 10.4, and (ii) except as may be mutually agreed by the Parties, (x) Vaccinex shall not disclose to a patent authority any Clinical Data relating to the Combination of the Vaccinex Compound and Merck Compound or any Sample Testing Results relating to Merck Compound in or in connection with any patent application (relating to any Invention or otherwise), and (y) Merck shall not disclose to a patent authority any Clinical Data relating to the Combination of the Vaccinex Compound and Merck Compound or any Sample Testing Results relating to the Vaccinex Compound in or in connection with any patent application (relating to any Invention or otherwise).

10.1.2 Promptly following the Effective Date, patent representatives of each of the Parties shall meet (in person or by telephone) to discuss the patenting strategy for any Jointly Owned Inventions which may arise, including deciding on (A) the timing for filing of any provisional or regular patent application; (B) the countries in which patent applications should be filed, subject to the opt-out procedure described below; and (C) the Party that will take the lead in prosecuting and/or maintaining particular Jointly Owned Inventions (the "Lead Prosecuting Party") (it being understood that the Parties may mutually agree to conduct some or all

prosecution and/or maintenance jointly through an outside patent counsel acceptable to both Parties). The Parties acknowledge and agree that unless otherwise agreed and subject to Section 10.1.1, the Lead Prosecuting Party shall have the first right (but not the obligation) to file a patent application (including any provisional, substitution, divisional, continuation, continuation in part, reissue, renewal, reexamination, extension, supplementary protection certificate and the like) in respect of any Jointly Owned Invention (each, a "**Joint Patent Application**"), using patent counsel selected by the Lead Prosecuting Party and reasonably acceptable to the other Party. In any event, the Parties shall consult and reasonably cooperate with one another in the preparation, filing, prosecution (including prosecution strategy) and maintenance of such Joint Patent Application and shall equally share the expenses associated therewith. For the avoidance of doubt both the Lead Prosecuting Party and the other Party shall be both fully and equally considered as the beneficial owners of the rights derived from the Jointly Owned Invention subject to the Joint Patent Application, subject to the opt-out procedure described below. If a Party (the "**Opting-out Party**") does not want to file a patent application for a Jointly Owned Invention (either generally or with respect to a particular country) or at any point after the initial filing wishes to discontinue the prosecution and maintenance of a Joint Patent Application, the other Party, at its sole option (the "**Continuing Party**"), may continue such prosecution and maintenance at its sole expense. In such event, the Opting-out Party shall execute such documents and perform such acts at the Continuing Party's expense as may be reasonably necessary in a timely manner to effect an assignment of such Joint Patent Application to the Continuing Party (in such country or all countries, as applicable) to allow the Continuing Party to prosecute and maintain such patent application. Any Joint Patent Application or Jointly Owned Invention so assigned shall thereafter be owned solely by the Continuing Party; provided, however, that the Opting-out Party (including its successors and assigns) shall retain a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license under any patent claims arising from such Jointly Owned Invention in any applicable countries with respect to the use, manufacture, sale or other exploitation of (a) where Vaccinex is the Opting-out Party, the Vaccinex Compound or any other Vaccinex Class Compound that is owned or controlled by Vaccinex, or (b) where Merck is the Opting-out Party, Merck Compound or any other Merck Class Compound that is owned or controlled by Merck, such license in each case being sublicensable or transferable solely together with an exclusive license or sublicense under or an assignment of the Opting-out Party's rights to any such compound.

10.1.3 Except as expressly provided in Section 10.1.2 and in furtherance and not in limitation of Section 9.1, each Party agrees it will not make or support any patent application based on the other Party's Confidential Information, and will not provide assistance to any Third Party for such application, without the other Party's prior written authorization.

10.1.4 Subject to this Section 10.1.4, Vaccinex shall have the first right (but not the obligation) to initiate legal action to enforce all Joint Patents against infringement, and to protect all Jointly Owned Inventions from misappropriation, by any Third Party where such infringement or misappropriation results from the development or sale of the Vaccinex Compound or a Vaccinex Class Compound, or to defend any declaratory judgment action or

inter partes review actions (or foreign equivalents thereof) relating thereto, at its sole expense. In the event that Vaccinex does not initiate or defend such action within thirty (30) days after being first notified of such infringement or misappropriation, Merck shall have the right to do so at its sole expense. Similarly, subject to this Section 10.1.4, Merck shall have the first right (but not the obligation) to initiate legal action to enforce all Joint Patents against infringement, and to protect all Jointly Owned Inventions from misappropriation, by any Third Party where such infringement or misappropriation results from the development or sale of Merck Compound or an Merck Class Compound, or to defend any declaratory judgment action or inter partes review actions (or foreign equivalents thereof) relating thereto, at its sole expense. In the event that Merck does not initiate or defend such action within thirty (30) days after being first notified of such infringement or misappropriation, Vaccinex shall have the right to do so at its sole expense. In the event that infringement of any Joint Patent or misappropriation of any Jointly Owned Invention results from the development or sale of a product combining, or a use or method of use of both, the Vaccinex Compound or a Vaccinex Class Compound and Merck Compound or an Merck Class Compound, the Parties shall discuss and agree on enforcement strategy and the Parties' rights and responsibilities regarding enforcement and the costs thereof.

10.1.5 If one Party exercises its right to initiate or defend legal action against a Third Party as set forth in Section 10.1.4 above, such initiating/defending Party shall keep the other Party reasonably and regularly informed of the status and progress of the action. The non-initiating/non-defending Party agrees to be joined as a party plaintiff where necessary for purposes of legal standing and to give the initiating/defending Party reasonable assistance and authority to file and prosecute the suit. In such case, the costs and expenses of the non-initiating/non-defending Party shall be borne by the initiating/defending Party, and the initiating/defending Party shall indemnify the non-initiating/non-defending Party against any claims, suits, losses, or liabilities incurred as a result of being joined as plaintiff, except to the extent arising from the negligence or willful misconduct of the non-initiating/non-defending Party. In any event, the non-initiating/non-defending Party shall have the right to be represented in the action by counsel of its choice and at its own expense. Any damages or other monetary awards recovered in the action shall be retained by the initiating/defending Party; provided, however, that in the event that the Parties agree to share the cost of the action as part of a cost-sharing arrangement, such damages or other monetary awards shall be shared by the Parties in proportion to their relative contributions to the total costs and expenses of the action, or as otherwise agreed by the Parties in writing. A settlement or consent judgment or other voluntary final disposition of a suit under this Section 10.1.5 may not be entered into without the consent of both Parties.

10.2 *Inventions Owned by Vaccinex.* Notwithstanding Section 10.1, the Parties agree that all rights to Inventions relating solely to the Vaccinex Compound, or a Vaccinex Class Compound, but not a Combination (collectively, "**Vaccinex Compound Inventions**"), are the sole and exclusive property of Vaccinex. Vaccinex shall be entitled to file in its own name relevant patent applications and to own resultant patent rights for any such Vaccinex Compound Invention. For the avoidance of doubt, any Invention generically encompassing the Vaccinex

Compound (and not a Merck Class Compound nor any Combination) within its scope, even where the Vaccinex Compound is not disclosed *per se*, is a Vaccinex Compound Invention and the sole and exclusive property of Vaccinex. Merck shall and hereby does assign to Vaccinex its entire right, title and interest in any such Vaccinex Compound Inventions.

10.3 *Inventions Owned by Merck*. Notwithstanding Section 10.1, the Parties agree that all rights to Inventions relating solely to Merck Compound or a Merck Class Compound but not to a Combination (collectively, "**Merck Compound Inventions**") are the sole and exclusive property of Merck. Merck shall be entitled to file in its own name relevant patent applications and to own resultant patent rights for any such Merck Compound Invention. For the avoidance of doubt, any Invention generically encompassing Merck Compound (and not a Vaccinex Class Compound nor any Combination) within its scope, even where Merck Compound is not disclosed *per se*, is a Merck Compound Invention and the sole and exclusive property of Merck. Vaccinex shall and hereby does assign to Merck its entire right, title and interest in any such Merck Compound Inventions.

10.4 *Mutual Freedom to Operate for Combination Inventions*.

(i) Vaccinex hereby grants to Merck a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license, transferable and sublicensable, under any claims in any patent owned or controlled by Vaccinex that was filed or includes a priority claim to an application that was filed prior to the initiation of the Study (i.e., first dosing of the first patient in the Study), or issues from any patent applications filed at any time and relating to an invention conceived of and owned or controlled by Vaccinex prior to initiation of the Study, which claims (a) specifically recite a product combining, or a use or method of use of both the Vaccinex Compound or a Vaccinex Class Compound, on the one hand, and Merck Compound or an Merck Class Compound, on the other hand, and (b) have been supported, in the patent disclosure or during prosecution with the applicable patent authority, by filing of or reference to Clinical Data, to practice the Combination for all purposes.

(ii) Merck hereby grants to Vaccinex a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license, transferable and sublicensable, under any claims in any patent owned or controlled by Merck that was filed or includes a priority claim to an application that was filed prior to the initiation of the Study (i.e., first dosing of the first patient in the Study), or issues from any patent applications filed at any time and relating to an invention conceived of and owned or controlled by Merck prior to initiation of the Study, which claims (a) specifically recite a product combining, or a use or method of use of both the Vaccinex Compound or a Vaccinex Class Compound, on the one hand, and Merck Compound or an Merck Class Compound, on the one hand, and (b) have been supported, in the patent disclosure or during prosecution with the applicable patent authority, by filing of or reference to Clinical Data, to practice the Combination for all purposes.

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(iii) Each of Merck and Vaccinex represents to the other that, on or prior to the Effective Date, it has disclosed in writing to such other Party (a) any unpublished patent applications filed by such Party and pending as of the Effective Date or (b) any written invention disclosures received as of the Effective Date by an employee of such Party who is responsible for deciding whether to file patent applications, in each case that specifically references the other Party's compound or class Compound by name, structure or publication. If it is determined by a court or other tribunal of competent jurisdiction that either Merck or Vaccinex breached the foregoing representation by failing to disclose such a patent application or invention disclosure, then such Party shall be deemed to have automatically granted to the other Party a perpetual, irrevocable, non-exclusive, worldwide, royalty-free, fully paid-up license, transferable and sublicensable, under any claims in any patent owned or controlled by such Party that issues from or includes a priority claim to such patent application or covers an invention contained in such invention disclosure, which claims specifically recite a product combining, or a use or method of use of both the Vaccinex Compound or a Vaccinex Class Compound, on the one hand, and Merck Compound or an Merck Class Compound, on the other hand, to practice the Combination for all purposes that would have obtained under this Agreement had such patent application or invention disclosure been disclosed to the other Party. This license shall be such Party's sole liability, and the other Party's sole remedy, for any breach of the foregoing representation.

(iv) Notwithstanding any other terms of this Section 10.4 to the contrary, the licenses granted under this Section 10.4 do not provide Merck or Vaccinex with any rights, title or interest in, or any license to, the other Party's intellectual property rights which do not claim the Combination (except that each Party grants to the other Party a non-exclusive license under its applicable intellectual property as necessary to conduct the Study) and do not grant any rights to Merck or Vaccinex to manufacture, have manufactured, sell or have sold, the other Party's Compound.

11. Reprints; Rights of Cross-Reference.

Consistent with applicable copyright and other laws, each Party may use, refer to, and disseminate reprints of scientific, medical and other published articles and materials from journals, conferences and/or symposia relating to the Study which disclose the name of a Party, provided such use does not constitute an endorsement of any commercial product or service by the other Party.

12. Press Releases and Publications.

12.1 Neither Party shall publicly disclose the terms of this Agreement without the prior written consent of the other Party, provided that Vaccinex may disclose the terms on a need to know basis in connection with the Study to maintain their compliance to the obligations stated herein, as required, or as needed to comply with applicable laws, including any reporting obligations with the Securities and Exchange Commission or listing requirements of a securities exchange; and provided further that the Parties will issue a joint press release promptly after the Effective Date generally describing the clinical collaboration set forth hereunder (the "**First Press Release**").

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12.2 To the extent required by Applicable Law or Vaccinex's policies, Vaccinex will register the Study with the Clinical Trials Registry located at www.clinicaltrials.gov and any other local clinical registry if locally legally required. Vaccinex is committed to timely publication of the final Study Results following Study Completion, after taking appropriate action to secure intellectual property rights (if any) arising from the Study in accordance with Section 3.9 and the review process described in Section 12.3. The publication of the final Study results will be in accordance with the Protocol.

12.3 Any publication or presentation of one Party relating to the activities governed under this Agreement requires prior written approval of the other Party. This includes, but is not limited to, all medical publications in peer-reviewed journals and abstracts and presentations at scientific or medical congresses. Any proposed publication or presentation of either Party shall be consistent with the other Party's scientific standards. This will be achieved by (i) applying the highest industry standards, including but not limited to the Good Publication Practice and the Recommendations for Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals of the International Committee of Medical Journal Editors (ICMJE) in their current version and (ii) publishing primary data manuscripts before any non-primary data (e.g. secondary analyses, case studies). Each publishing Party agrees to submit any proposed publication or presentation to the other Party as follows:

To Merck: email address: [***]
To Vaccinex: email address: [***] and [***]

for review at least [***] prior to submitting any such proposed publication to a publisher or proceeding with such proposed presentation. Within [***] of its receipt, the other Party shall advise the publishing Party, as the case may be, in writing of any information contained therein which is Confidential Information (other than Study Results) or which may impair the availability of patent protection for Inventions. The other Party shall have the right to require the publishing Party, as applicable, to remove specifically identified Confidential Information (other than Study Results) and/or to delay the proposed publication or presentation for an additional [***] to enable the other Party to seek patent protection for Inventions.

12.5 After the First Press Release, each Party agrees to seek the prior written approval of the other Party (such approval not to be unreasonably withheld) for any press release regarding the other Party's Compound, the Combination or the other Party's name, in all cases, to the extent not materially consistent with the First Press Release; provided, that neither Party shall be restricted from any press release or other disclosure reasonably required to comply with applicable laws, including any reporting obligations with the Securities and Exchange Commission or the listing requirements of an applicable securities exchange . Each Party will use reasonable efforts to provide the other Party with the draft press releases at least seven (7) business days prior to distribution. Vaccinex agrees to identify Merck and acknowledge Merck's support in any press release and any other publication or presentation of the results of the Study.

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13. Representations and Warranties; Disclaimers.

13.1 Each of Vaccinex and Merck represents and warrants to the other that (a) it has the full right and authority to enter into this Agreement and to perform its obligations hereunder (including its Compound supply obligations); (b) it has the full right and authority to grant the licenses hereunder that it purports to grant; and (c) subject to Sections 3.10 and 3.11, it has not entered into, and during the term of the Agreement will not enter into, any agreement or arrangement with any Third Party which would (i) prevent the Parties from performing the Study; or (ii) prevent either Party or both Parties from pursuing any additional studies with respect to the Combination; or (iii) violate the exclusivity obligations of such Party during the periods set forth in Sections 3.10 and 3.11, as applicable.

13.2 Vaccinex agrees to Manufacture and supply the Vaccinex Compound for purposes of the Study as set forth in Article 8, and Vaccinex hereby represents and warrants to Merck that, at the time of Delivery of the Vaccinex Compound, such Vaccinex Compound shall have been Manufactured and supplied in compliance with: (i) the Specifications for the Vaccinex Compound; (ii) the Clinical Quality Agreements; and (iii) all Applicable Law, including cGMP and health, safety and environmental protections. Merck agrees to Manufacture and supply Merck Compound for purposes of the Study as set forth in Article 8, and Merck hereby represents and warrants to Vaccinex that, at the time of Delivery of Merck Compound, such Merck Compound shall have been Manufactured and supplied in compliance with: (a) the Specifications for Merck Compound; (b) the Clinical Quality Agreements; and (c) all Applicable Law, including cGMP and health, safety and environmental protections.

13.3 Without limiting the foregoing, each Party is responsible for obtaining all regulatory approvals (including facility licenses) that are required to Manufacture its Compound in accordance with Applicable Law (provided that for clarity, Vaccinex shall be responsible for obtaining Regulatory Approvals for the Study as set forth in Section 3.3).

13.4 Vaccinex does not undertake that the Study shall lead to any particular result, nor is the success of the Study guaranteed. Neither Party accepts any responsibility for any use that the other Party may make of the Clinical Data nor for advice or information given in connection therewith.

13.3 *Anti-Corruption.*

13.3.1 In performing their respective obligations hereunder, the Parties acknowledge that the corporate policies of Vaccinex and Merck and their respective Affiliates require that each Party's business be conducted within the letter and spirit of the law. By signing this Agreement, each Party agrees to conduct the business contemplated herein in a manner

which is consistent with all Applicable Law, including the U.S. Foreign Corrupt Practices Act, good business ethics, and its ethics and other corporate policies, and to abide by the spirit of the other Party's applicable ethics and compliance guidelines which may be provided by such other Party from time to time. Specifically, each Party agrees that it has not, and covenants that it, its Affiliates, and its and its Affiliates' directors, employees, officers, and anyone acting on its behalf, will not, in connection with the performance of this Agreement, directly or indirectly, make, promise, authorize, ratify or offer to make, or take any action in furtherance of, any payment or transfer of anything of value for the purpose or intent of influencing, inducing or rewarding any act, omission or decision to secure an improper advantage; or improperly assisting it in obtaining or retaining business for it or the other Party, or in any way with the purpose or effect of public or commercial bribery.

13.3.2 Each Party shall not contact, or otherwise knowingly meet with, any Government Official for the purpose of discussing activities arising out of or in connection with this Agreement, without the prior written approval of the other Party, except where such meeting is consistent with the purpose and terms of this Agreement and in compliance with Applicable Law.

13.3.3 Each Party represents that: (i) it has no impediment to enter into the transaction contemplated in this Agreement; and (ii) it is not excluded, debarred, suspended, proposed for suspension or debarment, or otherwise ineligible for government programs.

13.3.4 Each Party represents and warrants that except as disclosed to the other in writing prior to the commencement of this Agreement: (1) it does not have any interest which directly or indirectly conflicts with its proper and ethical performance of this Agreement; and (2) it shall maintain arm's length relations with all Third Parties with which it deals for or on behalf of the other in performance of this Agreement. Each Party shall make all further disclosures as necessary to the other Party to ensure the information provided remains complete and accurate throughout the term of this Agreement. Subject to the foregoing, each Party agrees that it shall not hire or retain any Government Official to assist in its performance of this Agreement, with the sole exception of conduct of or participation in clinical trials under this Agreement, provided that such hiring or retention shall be subject to the completion by the hiring or retaining Party of a satisfactory anticorruption and bribery (*e.g.*, FCPA) due diligence review of such Government Official. Each Party further covenants that any future information and documentation submitted to the other Party as part of further due diligence or a certification shall be complete and accurate.

13.3.5 Each Party shall have the right during the term of this Agreement, and for a period of two (2) years following termination of this Agreement, to conduct an investigation and audit of the other Party's activities, books and records, to the extent they relate to that other Party's performance under this Agreement, to verify compliance with the terms of this Section 13.3. Such other Party shall cooperate fully with such investigation or audit, the scope, method, nature and duration of which shall be at the sole reasonable discretion of the Party requesting such audit.

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13.3.6 Each Party shall ensure that all transactions under the Agreement are properly and accurately recorded in all material respects on its books and records and that each document upon which entries in such books and records are based is complete and accurate in all material respects. Each Party further represents, warrants and covenants that all books, records, invoices and other documents relating to payments and expenses under this Agreement are and shall be complete and accurate and reflect in reasonable detail the character and amount of transactions and expenditures. Each Party must maintain a system of internal accounting controls reasonably designed to ensure that no off-the-books or similar funds or accounts will be maintained or used in connection with this Agreement.

13.3.7 Each Party agrees that in the event that the other Party believes in good faith that there has been a possible violation of any provision of Section 13.3, such other Party may make full disclosure of such belief and related information needed to support such belief at any time and for any reason to any competent government bodies and its agencies, and to whoever such Party determines in good faith has a legitimate need to know.

13.3.8 Each Party shall comply with its own ethical business practices policy and any Corporate Integrity Agreement to which it is subject, and shall conduct its Study-related activities in accordance with Applicable Law. Each Party agrees to ensure that all of its employees involved in performing its obligations under this Agreement are made specifically aware of the compliance requirements under this Section 13.3. In addition, each Party agrees to ensure that all such employees participate in and complete mandatory compliance training to be conducted by each Party, including specific training on anti-bribery and corruption, prior to his/her performance of any obligations or activities under this Agreement. Each Party further agrees to certify its continuing compliance with the requirements under this Section 13.3 on a periodic basis during the term of this Agreement in such form as may be reasonably requested by the other Party.

13.4 EXCEPT AS EXPRESSLY PROVIDED HEREIN, MERCK MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO MERCK COMPOUND, AND VACCINEX MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE VACCINEX COMPOUND.

14. Insurance; Indemnification; Limitation of Liability.

14.1 *Insurance.* Each Party warrants that it maintains a policy or program of insurance or self-insurance at levels sufficient to support the indemnification obligations assumed herein. Upon request, a Party shall provide evidence of such insurance.

14.2 *Indemnification.*

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14.2.1 *Indemnification by Vaccinex*. Vaccinex agrees to defend, indemnify and hold harmless Merck, its Affiliates, and its and their employees, directors, subcontractors and agents from and against any loss, damage, reasonable costs and expenses (including reasonable attorneys' fees and expenses) incurred in connection with any claim, proceeding, or investigation by a Third Party (collectively, the "**Claims**") to the extent arising out of this Agreement or the Study (a "**Vaccinex Liability**"), except to the extent that such Vaccinex Liability (A) was directly caused by (i) negligence or willful misconduct on the part of Merck (or any of its Affiliates, or its and their employees, directors, subcontractors or agents); (ii) a breach on the part of Merck of any of its representations and warranties or any other covenants or obligations of Merck under this Agreement; or (iii) a breach of Applicable Law by Merck; or (B) is determined to be attributable to Merck Compound.

14.2.2 *Indemnification by Merck*. Merck agrees to defend, indemnify and hold harmless Vaccinex, its Affiliates, and its and their employees, directors, subcontractors and agents from and against any Claims to the extent arising out of this Agreement or the Study (an "**Merck Liability**"), except to the extent that such Merck Liability (A) was directly caused by (i) negligence or willful misconduct on the part of Vaccinex (or any of its Affiliates, or its and their employees, directors, subcontractors or agents); (ii) a breach on the part of Vaccinex of any of its representations and warranties or any other covenants or obligations of Vaccinex under this Agreement; or (iii) a breach of Applicable Law by Vaccinex; or (B) is determined to be attributable to the Vaccinex Compound.

14.2.3 *Procedure*. The obligations of Merck and Vaccinex under this Section 14.2 are conditioned upon the delivery of written notice to Merck or Vaccinex, as the case might be, of any potential Liability within a reasonable time after a Party becomes aware of such potential Liability. A Party will have the right to assume the defense of any suit or claim related to the Liability (using counsel reasonably satisfactory to the other Party) if it has assumed responsibility for the suit or claim in writing. The other Party may participate in (but not control) the defense thereof at its sole cost and expense. The Party controlling such defense (the "**Defending Party**") shall keep the other Party (the "**Other Party**") advised of the status of such action, suit, proceeding or claim and the defense thereof and shall consider recommendations made by the Other Party with respect thereto. The Defending Party shall not agree to any settlement of such action, suit, proceeding or claim without the prior written consent of the Other Party, which shall not be unreasonably withheld. The Defending Party shall not agree to any settlement of such action, suit, proceeding or claim or consent to any judgment in respect thereof that does not include a complete and unconditional release of the Other Party from all liability with respect thereto or that imposes any liability or obligation on the Other Party without the prior written consent of the Other Party.

14.2.4 *Study Subjects*. Except as may be mutually agreed upon in writing in the Study informed consent form or a Site clinical trial agreement, Vaccinex shall not offer compensation on behalf of Merck to any Study subject or bind Merck to any indemnification obligations in favor of any Study subject. Likewise, except as may be mutually agreed in writing upon in the Study informed consent form or a Site clinical trial agreement, Merck shall not offer compensation on behalf of Vaccinex to any Study subject or bind Vaccinex to any indemnification obligations in favor of any Study subject.

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14.3 *LIMITATION OF LIABILITY.* OTHER THAN WITH RESPECT TO DAMAGES ARISING OUT OF OR RELATED TO A PARTY'S BREACH OF ITS OBLIGATIONS UNDER THIS AGREEMENT TO USE, DISCLOSE, LICENSE, ASSIGN OR OTHERWISE TRANSFER SAMPLE TESTING RESULTS, CLINICAL DATA, CONFIDENTIAL INFORMATION AND JOINTLY-OWNED INVENTIONS ONLY FOR THE USE HEREIN, IN NO EVENT SHALL EITHER PARTY (OR ANY OF ITS AFFILIATES OR SUBCONTRACTORS) BE LIABLE TO THE OTHER PARTY FOR, NOR SHALL ANY INDEMNIFIED PARTY HAVE THE RIGHT TO RECOVER, ANY SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR DAMAGES FOR LOST OPPORTUNITIES), WHETHER IN CONTRACT, WARRANTY, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE, ARISING OUT OF (x) THE MANUFACTURE OR USE OF ANY COMPOUND SUPPLIED HEREUNDER OR (y) ANY BREACH OF OR FAILURE TO PERFORM ANY OF THE PROVISIONS OF THIS AGREEMENT OR ANY REPRESENTATION, WARRANTY OR COVENANT CONTAINED IN OR MADE PURSUANT TO THIS AGREEMENT, EXCEPT THAT SUCH LIMITATION SHALL NOT APPLY TO DAMAGES PAID OR PAYABLE TO A THIRD PARTY BY AN INDEMNIFIED PARTY FOR WHICH THE INDEMNIFIED PARTY IS ENTITLED TO INDEMNIFICATION HEREUNDER.

15. Use of Name.

Except as expressly provided herein, neither Party shall have any right, express or implied, to use in any manner the name or other designation of the other Party or any other trade name, trademark or logo of the other Party for any purpose in connection with the performance of this Agreement.

16. Force Majeure.

If in the performance of this Agreement, one of the Parties is prevented, hindered or delayed by reason of any cause beyond such Party's reasonable control (*e.g.*, war, riots, fire, strike, governmental laws), such Party shall be excused from performance to the extent that it is necessarily prevented, hindered or delayed ("**Force Majeure**"). The nonperforming Party will notify the other Party of such Force Majeure within ten (10) days after such occurrence by giving written notice to the other Party stating the nature of the event, its anticipated duration, and any action being taken to avoid or minimize its effect. The suspension of performance will be of no greater scope and no longer duration than is necessary and the non-performing Party will use commercially reasonable efforts to remedy its inability to perform.

17. Entire Agreement; Modification.

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The Parties agree to the full and complete performance of the mutual covenants contained in this Agreement. This Agreement, together with the Related Agreements, constitutes the sole, full and complete agreement by and between the Parties with respect to the subject matter of this Agreement, and all prior agreements, understandings, promises and representations, whether written or oral, with respect thereto are superseded by this Agreement. No amendments, changes, additions, deletions or modifications to or of this Agreement shall be valid unless reduced to writing and signed by the Parties hereto.

18. Assignment and Sub-Contracting.

Neither Party shall assign or transfer this Agreement without the prior written consent of the other Party; provided, however, that no such consent shall be required in connection with a Change of Control of a Party. Notwithstanding the foregoing, either Party may assign all or any part of this Agreement to one or more of its Affiliates without the other Party's consent, and any and all rights and obligations of either Party may be exercised or performed by its Affiliates, provided that such Affiliates agree to be bound by this Agreement. In the event of a Change of Control of a Party, such Party undergoing the Change of Control shall notify the other Party in writing at least thirty (30) days prior to completion of such Change of Control (to the extent such notification is legally permissible prior to completion of such Change of Control, and if such notification is not legally permissible prior to such Change of Control, then such notification shall be provided to the other Party in writing simultaneously with the first public announcement with respect to such Change of Control). Any permitted assignee of a Party (which assignee shall include the Third Party in a Change of Control situation under Section 1.8(b)) shall, in writing to the non-assigning Party, expressly assume the obligation to perform this Agreement. Any attempted assignment not in accordance with this Section 18 shall be null and void and of no legal effect. The terms and conditions of this Agreement shall be binding upon, and shall inure to the benefit of, the Parties and their respected successors and permitted assigns. For the avoidance of doubt, nothing in this Section limits the provisions of Section 3.12.

19. Invalid Provision.

If any provision of this Agreement is held to be illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect and will not be affected by the illegal, invalid or unenforceable provision. In lieu of the illegal, invalid or unenforceable provision, the Parties shall negotiate in good faith to agree upon a reasonable provision that is legal, valid and enforceable to carry out as nearly as practicable the original intention of the entire Agreement.

20. No Additional Obligations.

Vaccinex and Merck have no obligation to renew this Agreement or apply this Agreement to any clinical trial other than the Study. Neither Party is under any obligation to enter into another type of agreement at this time or in the future.

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21. Dispute Resolution and Jurisdiction.

21.1 The Parties shall attempt in good faith to settle all disputes arising out of or in connection with this Agreement in an amicable manner. Any claim, dispute or controversy arising out of or relating to this Agreement, including the breach, termination or validity hereof or thereof (each, a "**Dispute**"), shall be governed by and construed in accordance with the substantive laws of the state of New York, without giving effect to its choice of law principles.

21.2 Nothing contained in this Agreement shall deny either Party the right to seek injunctive or other equitable relief from a court of competent jurisdiction in the context of a bona fide emergency or prospective irreparable harm, and such an action may be filed or maintained notwithstanding any ongoing discussions between the Parties.

22. Notices.

All notices or other communications that are required or permitted hereunder shall be in writing and delivered personally, sent by facsimile (and promptly confirmed by personal delivery or overnight courier), or sent by internationally-recognized overnight courier addressed as follows:

If to Vaccinex, to:

Vaccinex, Inc.
Attention: Chief Executive Officer
1895 Mt. Hope Avenue
Rochester, NY 14620
USA

With a copy to:

Vaccinex, Inc.
Attention: Legal Counsel
1895 Mt. Hope Avenue
Rochester, NY 14620
USA

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If to Merck, to:

Ares Trading S.A.
Attention: Legal Department
Z.I de l'Ouriettaz,
CH-1170 Aubonne,
Switzerland

With a copy to:

Merck KGaA
Attention: Merck Healthcare Legal
Frankfurter Strasse 250
64293 Darmstadt, Germany

23. Relationship of the Parties.

The relationship between the Parties is and shall be that of independent contractors, and does not and shall not constitute a partnership, joint venture, agency or fiduciary relationship. Neither Party shall have the authority to make any statements, representations or commitments of any kind, or take any actions, which are binding on the other Party, except with the prior written consent of the other Party to do so. All persons employed by a Party will be the employees of such Party and not of the other Party and all costs and obligations incurred by reason of any such employment shall be for the account and expense of such Party.

24. Counterparts and Due Execution.

This Agreement and any amendment may be executed in two (2) or more counterparts (including by way of facsimile or electronic transmission), each of which shall be deemed an original, but all of which together shall constitute one and the same instrument, notwithstanding any electronic transmission, storage and printing of copies of this Agreement from computers or printers. When executed by the Parties, this Agreement shall constitute an original instrument, notwithstanding any electronic transmission, storage and printing of copies of this Agreement from computers or printers. For clarity, facsimile signatures and signatures transmitted via PDF shall be treated as original signatures.

25. Construction.

Except where the context otherwise requires, wherever used, the singular will include the plural, the plural the singular, the use of any gender will be applicable to all genders, and the word "or" is used in the inclusive sense (and/or). Whenever this Agreement refers to a number of days, unless otherwise specified, such number refers to calendar days. The captions of this Agreement are for convenience of reference only and in no way define, describe, extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement.

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The term “including” as used herein shall be deemed to be followed by the phrase “without limitation” or like expression. The terms “will” and “shall” as used herein have the same meaning. References to “Article,” “Section” or “Appendix” are references to the numbered sections of this Agreement and the appendices attached to this Agreement, unless expressly stated otherwise. Except where the context otherwise requires, references to this “Agreement” shall include the appendices attached to this Agreement. The language of this Agreement shall be deemed to be the language mutually chosen by the Parties and no rule of strict construction will be applied against either Party hereto.

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[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the respective representatives of the Parties have executed this Agreement as of the Effective Date.

Ares Trading S.A.

By: /s/ James Singleton
Name: James Singleton
Title: Head of Legal Business Development

Ares Trading S.A.

By: /s/ Guillaume Vignon
Name: Guillaume Vignon
Title: Head of Immuno-Oncology Licensing & Business Development

Vaccinex, Inc.

By: /s/ Maurice Zauderer
Name: Maurice Zauderer, Ph.D.
Title: President & CEO

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Appendix A

PROTOCOL SUMMARY

SYNOPSIS

Study Number:	[***]
Title	Phase 1b/2 Study of VX15/2503 in combination with avelumab in non-small cell lung cancer
Target Population:	Advance non-small cell lung cancer (NSCLC) who are immunotherapy-naïve. Immunotherapy naïve will be defined as no prior treatment with anti-PD1/PD-L1, anti-CTLA4, anti-Lymphocyte-activation gene 3 (LAG-3), anti-T-cell Immunoglobulin domain and Mucin domain 3 (TIM-3), or anti-CD137 drugs.
[***]	[***]
Development Phase	1b/2
Investigational Products	VX15/2503 in combination with Avelumab
Active ingredients	**VX15/2503:** Humanized IgG4 monoclonal antibody against semaphorin 4D (anti-SEMA4D antibody) **Avelumab:** Humanized IgG1 monoclonal antibody against programmed death-ligand 1 (anti-PD-L1 antibody)
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***] [***]
[***]	[***]
[***]	[***]

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[***] [***]

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[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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[***]	[***]	[***]

[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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Appendix B

SUPPLY OF COMPOUNDS

Schedule of Deliveries for Merck Compound

Delivery Date	Quantity of [**]	Quantity of [**]
Total		

DRUG RESPONSIBILITY MATRIX

Task	Responsibility of Vaccinex	Responsibility of Merck
[***]		
[***]		
[***]		
[***]		
[***]		
[***]		
[***]		
[***]		

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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Appendix C

STUDY BUDGET

Total Direct Costs	[***]	
Detailed Direct Cost Comparison by Large Category		
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
Total Indirect Costs	[***]	
Detailed Indirect Cost Comparison by Large Category		
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
[***]		[***]
Central Lab		[***]
[***]		
[***]		
[***]		[***]
[***]		
TOTAL		[***]

[***] INDICATES MATERIAL THAT WAS OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT WAS REQUESTED. ALL SUCH OMMITTED MATERIAL WAS FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED.

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Exhibit 21.1

List of Subsidiaries

Name	Jurisdiction of Incorporation
Vaccinex Products, LP	Delaware