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Filed Pursuant to Rule 424(b)(4)
Registration No. 333-226103

PROSPECTUS

3,333,334 Shares

Common Stock

We are offering 3,333,334 shares of our common stock. This is our initial public offering and no public market currently exists for our common stock. The initial public offering price is $12.00 per share.

We have been approved 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 11 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	$ 12.00	$40,000,008
Underwriting discounts and commissions(1)	$ 0.84	$ 2,800,001
Proceeds, before expenses, to us	$ 11.16	$37,200,007

(1) See "Underwriting" beginning on page 154 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 500,000 additional shares of common stock to cover over-allotments, if any.

Affiliates of Albert D. Friedberg, our Chairman, including FCMI Parent Co., have agreed to purchase an aggregate of $29.5 million in shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on these shares as they will on the other shares sold to the public in this offering.

Delivery of the shares of common stock purchased in this offering is expected to be made on or about August 13, 2018.

Oppenheimer & Co. **BTIG**

Ladenburg Thalmann

Prospectus dated August 9, 2018

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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.

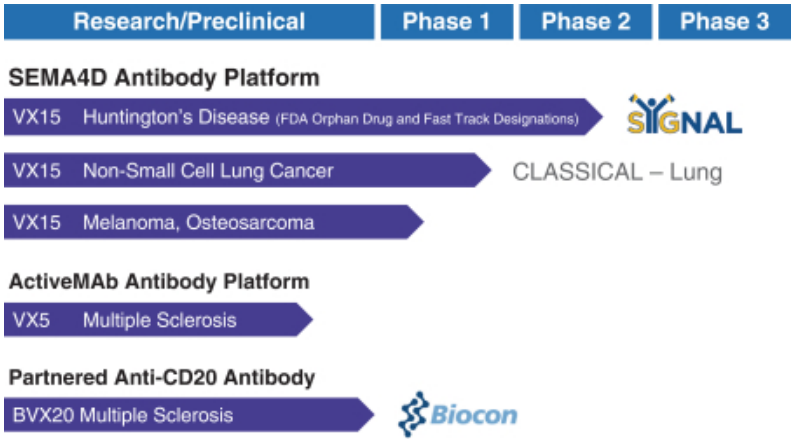
- ***Our SEMA4D antibody platform*** is the application of our extensive knowledge of SEMA4D biology to develop our lead product candidate VX15 for the treatment of various indications, including cancer and neuroinflammatory and neurodegenerative diseases. VX15's mechanisms of action block the SEMA4D 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 multiple sclerosis, or MS, and potentially for other 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.

Vaccinex 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. VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissues, and is currently in preclinical development for the treatment of MS and potentially for other autoimmune disorders. VX25, a bi-specific NKT cell stimulator, is being evaluated in various preclinical cancer models and seeks to address challenges for the therapeutic application of NKT cell stimulation for cancer immunotherapy. 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. As of August 3, 2018, 297 patients have been treated or enrolled in five Phase 1 clinical trials and one Phase 2 clinical trial of VX15 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 June 2018, an investigator-sponsored clinical trial, or IST, of VX15 in combination with *Yervoy*® (ipilimumab) and with *Opdivo*® (nivolumab) began at the UCLA 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 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 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. One hundred forty-six of a planned 240 patients have been enrolled in Cohort B as of August 3, 2018, and the estimated primary completion date is the third quarter of 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 for the treatment of MS and potentially other 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 efficiently discover 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. If any of these risks actually occurs, our business, financial condition or results of operations would likely be materially adversely affected. In such case, the trading price of shares of our common stock would likely decline, and you may lose all or part of your investment. 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 three months ended March 31, 2018, we reported a net loss of $7.9 million, and as of March 31, 2018, we had an accumulated deficit of $195.1 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.

Emerging Growth Company

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings. See the section of this prospectus entitled "Implications of Being an Emerging Growth Company" for more information.

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	3,333,334 shares (or 3,833,334 shares if the underwriters exercise their option in full to purchase additional shares)
Common stock to be outstanding immediately following this offering	11,475,049 shares (or 11,975,049 shares if the underwriters exercise their option in full to purchase additional shares)
Over-allotment option	We have granted the underwriters an option for 30 days from the date of this prospectus to purchase up to 500,000 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 repay certain debt obligations, 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.
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.
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

Affiliates of Albert D. Friedberg, our Chairman, including FCMI Parent Co., or FCMI Parent, have agreed to purchase an aggregate of $29.5 million in shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on these shares as they will on the other shares sold to the public in this offering.

The number of shares of our common stock to be outstanding immediately following this offering set forth above is based on 8,141,715 shares of our common stock outstanding as of March 31, 2018, which gives effect to each of the following, assuming such actions occurred on March 31, 2018: (i) the 1-for-10 reverse stock split of our common stock effected on August 7, 2018; and (ii) the conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock.

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

- 1,202,566 shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, LP, or Vaccinex Products, of which 967,983 shares will be beneficially owned by FCMI Parent;

- 1,318,797 shares of common stock issuable upon the exchange of limited partnership interests of VX3 (DE) LP, or VX3 (including 1,180,051 shares that will be owned by FCMI Parent), which reflects $4.0 million of additional capital contributions received after March 31, 2018;
- 438,496 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2018 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 $9.50 per share; and
- 425,000 shares of our common stock reserved for issuance under our 2018 Omnibus Incentive Plan, or 2018 Plan, which will become effective the day prior to the effectiveness of the registration statement of which this prospectus is a part, 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 March 31, 2018:

- the 1-for-10 reverse stock split of our common stock effected on August 7, 2018;
- no exercise by the underwriters of their over-allotment option to purchase up to 500,000 additional shares of common stock from us;
- the conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock;
- the repayment of a $1.5 million convertible promissory note issued in June 2016, or the June 2016 Note, held by a related party, Vaccinex (Rochester), L.L.C., or Vaccinex LLC, which is majority owned and controlled by Dr. Maurice Zauderer, our President, Chief Executive Officer and a member of our board of directors, and accrued interest and the write-off of the related embedded derivative liability; 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. The consolidated statements of operations data for the three months ended March 31, 2017 and 2018 and the consolidated balance sheet data as of March 31, 2018 are derived from our unaudited consolidated financial statements, included elsewhere in this prospectus. In management's opinion, the unaudited interim consolidated financial statements include all adjustments necessary to state fairly our financial position as of March 31, 2018 and results of operations and cash flows for the three months ended March 31, 2017 and 2018. 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.

	Year Ended December 31,		Three Months Ended March 31,	
(in thousands, except share and per share data)	2016	2017	2017	2018
Consolidated Statement of Operations Data:				
Revenue	$ 316	$ 90	$ –	$ 206
Costs and expenses:				
Cost of revenue	115	160	–	240
Research and development[1]	16,028	16,551	3,839	4,454
General administrative[1]	4,432	4,483	1,070	1,221
Total costs and expenses	20,575	21,194	4,909	5,915
Loss from operations	(20,259)	(21,104)	(4,909)	(5,709)
Change in fair value of derivative liabilities	9,310	3,743	(520)	308
Interest expense	(2,990)	(1,358)	(272)	(267)
Loss on extinguishment of related party convertible promissory note	–	–	–	(2,180)
Other expense, net	(4)	(40)	(16)	(14)
Loss before provision for income taxes	(13,943)	(18,759)	(5,717)	(7,862)
Provision for income taxes	–	–	–	–
Net loss	(13,943)	(18,759)	(5,717)	(7,862)
Net loss attributable to noncontrolling interests	–	37	–	–
Net loss attributable to Vaccinex, Inc.	$ (13,943)	$ (18,722)	$ (5,717)	$ (7,862)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)	(792)	(792)
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)	$ (6,509)	$ (8,654)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (25.27)	$ (19.90)	$ (5.91)	$ (7.85)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, Inc., basic and diluted	1,038,141	1,101,937	1,100,914	1,102,571
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted[2]		$ (1.72)		$ (0.89)
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted[2]		7,939,522		8,141,726

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

(in thousands)	Year Ended December 31, 2016	2017	Three Months Ended March 31, 2017	2018
Research and development	$ 65	$ 54	$ 19	$ 21
General and administrative	70	265	13	15
Total stock-based compensation expense	$135	$319	$ 32	$ 36

(2) See Note 13 to our audited consolidated financial statements appearing elsewhere in this prospectus for a description of the method used to calculate basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders and pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders.

(in thousands)	March 31, 2018 Actual	Pro Forma(1)	Pro Forma As Adjusted(10)
Consolidated Balance Sheet Data:			
Cash and cash equivalents	$ 2,924	$ 1,200(2)	$ 36,000
Working capital	(1,547)	(3,047)(3)	31,753
Total assets	4,946	3,222	38,022
Convertible promissory notes to related party, net	1,228	—(4)	—
Derivative liabilities	61	—(5)	—
Total liabilities	6,544	5,031(6)	5,031
Redeemable convertible preferred stock	111,718	—(7)	—
Convertible preferred stock	7,684	—(8)	—
Total stockholders' (deficit) equity	(113,316)	(1,809)(9)	32,991

(1) The pro forma column gives effect to (i) the nonrecurring conversion of all outstanding shares of our preferred stock into shares of our common stock and (ii) the repayment of the June 2016 Note and accrued interest and the write-off of the embedded derivative liability as a result of the repayment had this initial public offering occurred on March 31, 2018. 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 decreased $1.7 million from the repayment of the June 2016 Note and accrued interest.

(3) Our working capital would have decreased by $1.5 million had this offering occurred on March 31, 2018 due to (i) $1.7 million decrease cash and cash equivalents as stated in note (2) above and (ii) $0.2 million decrease in accrued interest of the June 2016 Note upon its repayment.

(4) Our convertible promissory notes to related party would have decreased by $1.2 million had this offering occurred on March 31, 2018 due to the repayment of the June 2016 Note and write-off of unamortized debt discount.

(5) Our derivative liabilities associated with our convertible promissory notes would have decreased by $0.1 million had this offering occurred on March 31, 2018 due to the repayment of the June 2016 Note and the related accrued interest and the write-off of the embedded derivative liability.

(6) Our total liabilities would have decreased by $1.5 million had this offering occurred on March 31, 2018 due to the repayment of the June 2016 Note and the related accrued interest and the write-off of the embedded derivative liability as described above.

(7) Our redeemable convertible preferred stock would have decreased by $111.7 million had this offering occurred on March 31, 2018 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 6,468,917 shares of our common stock and the resulting reclassification of the redeemable convertible preferred stock into common stock and additional paid-in capital.

(8) Our convertible preferred stock would have decreased by $7.7 million had this offering occurred on March 31, 2018 due to the conversion of all outstanding shares of our Series A preferred stock into 570,238 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 $111.5 million had this offering occurred on March 31, 2018 due to (i) the conversion of all outstanding shares of our preferred stock into common stock and additional paid-in capital; and (ii) the repayment of the June 2016 Note and accrued interest and the write-off of the related embedded derivative liability as a result of the repayment as described above.

(10) The pro forma as adjusted column gives further effect to the sale of 3,333,334 shares of common stock in this offering at the initial public offering price of $12.00 per share, 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 March 31, 2018.

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 and for the three months ended March 31, 2017 and 2018, we reported a net loss of $13.9 million, $18.8 million, $5.7 million and $7.9 million, respectively. As of March 31, 2018, we had an accumulated deficit of $195.1 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 product 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 positive, 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 to 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 studying 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 by 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 even if our preclinical studies or clinical trials initially appear to be successful.

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 for 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 studying 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 product candidates, 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 product candidates 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 collaborations 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. The Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law in 2011 and many of its implementing regulations became effective in 2013. 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 changes include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. The changes in patent law due to the Leahy-Smith Act and its implementing regulations 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, 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. The initial public offering price of our common stock in this offering was agreed between us and the underwriters based on a number of factors, including market conditions at the time of the offering, which may not be indicative of the price at which our shares of common stock will trade following the completion of 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 64.6% of our outstanding voting stock, including Albert D. Friedberg, our Chairman, who beneficially owned 47.8% of our outstanding voting stock, including 42.6% of our outstanding voting stock beneficially owned by FCMI Parent. Upon completion of this offering, assuming Mr. Friedberg's affiliates purchase $29.5 million in shares of our common stock in this offering at the initial offering price, that same group and Mr. Friedberg will beneficially own approximately 69.8% and 58.7% (of which 50.9% will be beneficially owned by FCMI Parent), 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 140 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 errors or mistakes. 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 11,475,049 shares of common stock outstanding based on the number of shares outstanding as of March 31, 2018, assuming: (i) the 1-for-10 reverse stock split of our common stock effected on August 7, 2018; (ii) no exercise of the underwriters' option to purchase additional shares; and (iii) the conversion of all outstanding shares of our convertible preferred stock into an aggregate of 7,039,155 shares of our common stock, assuming such conversion occurred on March 31, 2018. 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. We believe that substantially all of our shares of common stock outstanding as of the date of this prospectus (including securities converted into shares of common stock in connection with this offering) may be sold in the public market by existing shareholders 90 days after the date of this prospectus, subject to the various lock-up agreements and applicable volume, manner of sale and other limitations imposed under the federal securities laws.

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 upon 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 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 $34.8 million, based on the initial public offering price of $12.00 per share, 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 $40.4 million based on the initial public offering price of $12.00 per share, 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 $5 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 $25 million to fund development of VX15 as a therapy in Huntington's disease through the end of 2019;
- approximately $3 million to fund continued preclinical research using our platform technologies;
- approximately $1.8 million to repay the June 2016 Note in full, including $0.3 million in accrued interest, assuming the note was repaid on July 20, 2018; and
- the remainder, if any, for working capital and general corporate purposes, including but not limited to support of Biocon's trial of BVX20 in MS and exploratory studies or ISTs of the application of VX15 in other indications.

We intend to use part of the net proceeds from this offering to repay the June 2016 Note and accrued interest in full. 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. The June 2016 Note is held by a related party, Vaccinex LLC, which is majority owned and controlled by Dr. Maurice Zauderer, our President, Chief Executive Officer and a member of our board of directors. 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.

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.

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 March 31, 2018 on:

- an actual basis;
- a pro forma basis giving effect to the following as if each had occurred as of March 31, 2018:
  - conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock; and
  - repayment of the June 2016 Note and accrued interest and write-off of the related embedded derivative liability as a result of the repayment of the June 2016 Note.
- a pro forma as adjusted basis giving further effect to the sale by us of 3,333,334 shares of common stock in this offering at the initial public offering price of $12.00 per share, 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, the number of shares sold, 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 March 31, 2018		
(in thousands, except share and per share amounts)	**Actual**	**Pro Forma**	**Pro Forma As Adjusted**
Cash and cash equivalents	$ 2,924	$ 1,200	$ 36,000
Convertible promissory notes to related party, net	1,228	–	–
Accrued interest on convertible promissory notes	224	–	–
Derivative liabilities	61	–	–
Redeemable convertible preferred stock (Series B, B-1, B-2, C, D), par value of $0.001 per share; 66,317,000 shares authorized; 53,089,959 shares issued and 53,089,796 shares outstanding actual; no shares issued and outstanding, pro forma and pro forma as adjusted	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, actual; no shares issued and outstanding, pro forma and pro forma as adjusted	7,684	–	–
Common stock, par value of $0.0001 per share; 160,000,000 shares authorized; 1,103,396 shares issued and 1,102,560 shares outstanding, actual; 8,142,567 shares issued and 8,141,715 shares outstanding, pro forma; 100,000,000 shares authorized, 11,475,901 shares issued and 11,475,049 shares outstanding, pro forma as adjusted	–	1	1
Additional paid-in capital	54,159	173,349	208,149
Treasury stock, at cost	(11)	(11)	(11)
Accumulated deficit	(195,111)	(195,111)	(195,111)
Noncontrolling interests	19,963	19,963	19,963
Total stockholders’ (deficit) equity	(113,316)	(1,809)	32,991
Total capitalization	$ (85)	(1,809)	32,991

The outstanding share information in the table above is based on 11,475,049 shares of common stock outstanding as of March 31, 2018, which gives effect to the pro forma transactions described above and excludes the following:

- 1,202,566 shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, of which 967,983 shares will be beneficially owned by FCMI Parent;
- 1,318,797 shares of common stock issuable upon the exchange of limited partnership interests of VX3 (including 1,180,051 shares that will be owned by FCMI Parent), which reflects $4.0 million of additional capital contributions received after March 31, 2018;
- 438,496 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2018 under our 2001 Plan and our 2011 Plan, at a weighted-average exercise price of $9.50 per share; and
- 425,000 shares of our common stock reserved for issuance under our 2018 Plan, which will become effective the day prior to the effectiveness of the registration statement of which this prospectus is a part, 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 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 March 31, 2018 was $2.3 million, or $2.04 per share, based on 1,102,560 shares of common stock outstanding as of March 31, 2018. Our pro forma net tangible book deficit as of March 31, 2018 was $2.5 million, or $0.30 per share of common stock. Our pro forma net tangible book deficit per share gives effect to the following as if had occurred as of March 31, 2018: (i) conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock and (ii) repayment of the June 2016 Note and accrued interest.

After giving effect to the sale of 3,333,334 shares of common stock in this offering at the initial public offering price of $12.00 per share, 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 March 31, 2018 would have been $32.3 million, or $2.82 per share. This amount represents an immediate increase in pro forma as adjusted net tangible book value of $4.86 per share to existing stockholders and an immediate dilution of $9.18 per share to investors purchasing shares in this offering. The following table illustrates this dilution on a per share basis to new investors:

Initial public offering price per share		$12.00
Historical net tangible book deficit per share as of March 31, 2018	$(2.04)	
Pro forma increase in net tangible book value per share attributable to pro forma transactions and other adjustments described above	1.74	
Pro forma net tangible book value per share before this offering	(0.30)	
Pro forma increase in net tangible book value per share attributable to investors in this offering	3.12	
Pro forma as adjusted net tangible book value per share after this offering		4.86
Dilution in pro forma as adjusted net tangible book value per share to new investors in this offering		$ 9.18

If the underwriters exercise their over-allotment option in full, the pro forma as adjusted net tangible book value per share after giving effect to this offering would be $3.17 per share, which amount represents an immediate increase in pro forma net tangible book value of $3.47 per share of our common stock to existing stockholders and an immediate dilution in net tangible book value (deficit) of $8.83 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 March 31, 2018, assuming the treasury stock method, our pro forma net tangible book value as of March 31, 2018, before giving effect to the issuance and sale of shares in this offering, would have been $1.7 million, or $0.20 per share, and our pro forma as adjusted net tangible book value as of March 31, 2018 after this offering would have been $36.5 million, or $3.06 per share, causing dilution to new investors of $8.94 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 the day prior to the effectiveness of the registration statement of which this prospectus is a part, 425,000 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 March 31, 2018, 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 initial public offering price of $12.00 per share, before deducting the underwriting discounts and commissions and estimated offering expenses payable by us:

	Shares Purchased		Total Cash Consideration		Average Price Per Share
	Number	Percent	Amount	Percent	
(in thousands, except per share amounts)					
Existing stockholders	8,141,715	71%	173,561,000	81%	$ 21.32
New investors	3,333,334	29%	40,000,008	19%	$ 12.00
Total	11,475,049	100%	$ 213,561,008	100%	

The above tables and discussions are based on 11,475,049 shares of common stock outstanding as of March 31, 2018, which gives effect to the pro forma transactions described above and excludes:

- 1,202,566 shares of common stock issuable upon the exchange of the limited partnership interests of Vaccinex Products, of which 967,983 shares will be beneficially owned by FCMI Parent;
- 1,318,797 shares of common stock issuable upon the exchange of the limited partnership interests of VX3 (including 1,180,051 shares that will be owned by FCMI Parent), which reflects $4.0 million of additional capital contributions received after March 31, 2018;
- 438,496 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2018 under our 2001 Plan and our 2011 Plan, at a weighted-average exercise price of $9.50 per share; and
- 425,000 shares of our common stock reserved for issuance under our 2018 Plan, which will become effective the day prior to the effectiveness of the registration statement of which this prospectus is a part, 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. The consolidated statements of operations data for the three months ended March 31, 2017 and 2018 and the consolidated balance sheet data as of March 31, 2018 are derived from our unaudited consolidated financial statements, included elsewhere in this prospectus. In management's opinion, the unaudited interim consolidated financial statements include all adjustments necessary to state fairly our financial position as of March 31, 2018 and results of operations and cash flows for the three months ended March 31, 2017 and 2018. 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.

	Year Ended December 31,		Three Months Ended March 31,	
(in thousands, except share and per share data)	2016	2017	2017	2018
Consolidated Statement of Operations Data:				
Revenue	$ 316	$ 90	$ –	$ 206
Costs and expenses:				
Cost of revenue	115	160	–	240
Research and development(1)	16,028	16,551	3,839	4,454
General administrative(1)	4,432	4,483	1,070	1,221
Total costs and expenses	20,575	21,194	4,909	5,915
Loss from operations	(20,259)	(21,104)	(4,909)	(5,709)
Change in fair value of derivative liabilities	9,310	3,743	(520)	308
Interest expense	(2,990)	(1,358)	(272)	(267)
Loss on extinguishment of related party convertible promissory note	–	–	–	(2,180)
Other expense, net	(4)	(40)	(16)	(14)
Loss before provision for income taxes	(13,943)	(18,759)	(5,717)	(7,862)
Provision for income taxes	–	–	–	–
Net loss	(13,943)	(18,759)	(5,717)	(7,862)
Net loss attributable to noncontrolling interests	–	37	–	–
Net loss attributable to Vaccinex, Inc.	$ (13,943)	$ (18,722)	$ (5,717)	$ (7,862)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)	(792)	(792)
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)	$ (6,509)	$ (8,654)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted(2)	$ (25.27)	$ (19.90)	$ (5.91)	$ (7.85)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, Inc., basic and diluted(2)	1,038,141	1,101,937	1,100,914	1,102,571
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted(2)		$ (1.72)		$ (0.89)
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted(2)		7,939,522		8,141,726

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

(in thousands)	Year Ended December 31, 2016	Year Ended December 31, 2017	Three Months Ended March 31, 2017	Three Months Ended March 31, 2018
Research and development	$ 65	$ 54	$ 19	$ 21
General and administrative	70	265	13	15
Total stock-based compensation expense	$ 135	$ 319	$ 32	$ 36

(2) See Note 13 to our audited financial statements appearing elsewhere in this prospectus for a description of the method used to calculate basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders and pro forma basic and diluted net loss per share attributable to Vaccinex, Inc. common stockholders.

(in thousands)	December 31, 2016	December 31, 2017	March 31, 2018
Consolidated Balance Sheet			
Cash and cash equivalents	$ 1,661	$ 4,180	$ 2,924
Working capital	(2,328)	809	(1,547)
Total assets	2,842	5,575	4,946
Convertible promissory notes to related party, net	1,037	2,813	1,228
Derivative liabilities	694	369	61
Total liabilities	6,171	7,347	6,544
Redeemable convertible preferred stock	103,736	111,718	111,718
Convertible preferred stock	7,684	7,684	7,684
Total stockholders' deficit	(107,065)	(113,490)	(113,316)

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 and the three months ended March 31, 2017 and 2018, we reported a net loss of $13.9 million, $18.8 million, $5.7 million and $7.9 million, respectively. As of December 31, 2017 and March 31, 2018, we had cash and cash equivalents of $4.2 million and $2.9 million, respectively. 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 and the three months ended March 31, 2018, 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 for our clinical trials and activities related to regulatory filings, employee compensation-related costs, supply expenses, equipment depreciation and amortization, consulting and other miscellaneous costs. The following table sets forth the components of our research and development expenses and the amount as a percentage of total research and development expenses for the periods indicated.

	Year Ended December 31,				Three Months Ended March 31,			
	2016		2017		2017		2018	
	(in thousands)	%	(in thousands)	%	(in thousands)	%	(in thousands)	%
Clinical trial costs	$ 10,590	66%	$ 10,801	65%	$ 2,380	62%	$ 3,050	68%
Wages, benefits, and related costs	3,259	20%	3,564	22%	922	24%	753	17%
Preclinical supplies and equipment depreciation	1,458	9%	1,527	9%	409	11%	493	11%
Consulting, non-clinical trial services, and other	721	5%	659	4%	128	3%	158	4%
Total research and development expenses	$ 16,028		$ 16,551		$ 3,839		$ 4,454	

Our current research and development activities primarily relate to the clinical development of the following programs:

- VX15, a humanized monoclonal antibody that binds and blocks the signaling activity of SEMA4D. We are advancing VX15 for the treatment of cancer and certain neuroinflammatory and neurodegenerative diseases, including Huntington's disease. As of August 3, 2018, 297 patients have been treated or enrolled in five Phase 1 clinical trials and one Phase 2 clinical trial of VX15 in separate indications.
- VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissue, and is currently in preclinical development for the treatment of MS and potentially for other autoimmune disorders.
- VX25, 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 expense research and development costs as incurred. We record costs for certain development activities, such as clinical trials, based on an evaluation of the progress to completion of specific tasks using data such as

patient enrollment. We do not allocate employee related costs, depreciation, rental and other indirect costs to specific research and development programs because these costs are deployed across multiple of our product programs under research and development.

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 studying 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 rates 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) $18.20 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 its conversion or repayment.

Interest Expense

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

Loss on Extinguishment of Related Party Convertible Promissory Note

We recognized a loss on the extinguishment of a related party convertible promissory note in the three months ended March 31, 2018 as a result of the holder waiving an option arrangement upon the repayment of the note and the resulting accelerated recognition of the related unamortized debt discount.

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,		Three Months Ended March 31,	
	2016	2017	2017	2018
Revenue	$ 316	$ 90	$ –	$ 206
Costs and expenses:				
Cost of revenue	115	160	–	240
Research and development	16,028	16,551	3,839	4,454
General and administrative	4,432	4,483	1,070	1,221
Total costs and expenses	20,575	21,194	4,909	5,915
Loss from operations	(20,259)	(21,104)	(4,909)	(5,709)
Change in fair value of derivative liabilities	9,310	3,743	(520)	308
Interest expense	(2,990)	(1,358)	(272)	(267)
Loss on extinguishment of related party convertible promissory note	–	–	–	(2,180)
Other expense, net	(4)	(40)	(16)	(14)
Loss before provision for income taxes	(13,943)	(18,759)	(5,717)	(7,862)
Provision for income taxes	–	–	–	–
Net loss	(13,943)	(18,759)	(5,717)	(7,862)
Net loss attributable to noncontrolling interests	–	37	–	–
Net loss attributable to Vaccinex, Inc.	$(13,943)	$(18,722)	$(5,717)	$(7,862)

Comparison of the Three Months Ended March 31, 2017 and 2018

Revenue and Cost of Revenue

There was no service revenue or cost of revenue during the three months ended March 31, 2017. The $0.2 million service revenue and $0.2 million cost of revenue during the three months ended March 31, 2018 was primarily due to amortization of deferred revenue and cost incurred for our collaboration agreements entered in December 31, 2017.

Operating Expenses

	Three Months Ended March 31,			
	2017	2018	$ Change	% Change
	(in thousands)			
Research and development	$3,839	$4,454	$ 615	16%
General and administrative	1,070	1,221	151	14
Total operating expenses	$4,909	$5,675	$ 766	16%

Research and Development. Research and development expenses in the three months ended March 31, 2018 increased by $0.6 million, or 16%, compared to the three months ended March 31, 2017. This increase was primarily attributable to a $0.6 million increase in manufacturing costs as a result of increased drug supply for patients enrolled in active clinical trials.

General and Administrative. General and administrative expenses in the three months ended March 31, 2018 increased by $0.2 million, or 14%, compared to the three months ended March 31, 2017. This increase was primarily attributable to increased accounting and consulting fees associated with our initial public offering readiness activities.

Change in Fair Value of Derivative Liabilities

	Three Months Ended March 31,			
	2017	2018	$ Change	% Change
	(in thousands)			
Change in fair value of derivative liabilities	$(520)	$308	$ (828)	(159)%

Change in fair value of derivative liabilities in the three months ended March 31, 2018 changed by $0.8 million, or 159%, compared to the three months ended March 31, 2017. The change was primarily due to an increase of $0.5 million in the fair value of derivative liabilities during the three months ended March 31, 2017 as a result of increased conversion probability of the convertible promissory notes and a decrease of $0.3 million in the fair value of derivative liabilities associated with the January 2017 Note upon its repayment and the waiving of the option arrangement in March 2018.

Interest Expense

	Three Months Ended March 31,			
	2017	2018	$ Change	% Change
	(in thousands)			
Interest expense	$272	$267	$ (5)	(2)%

Interest expense in the three months ended March 31, 2018 stayed relatively consistent compared to the three months ended March 31, 2017 as the related convertible promissory notes were outstanding for the majority of both periods.

Loss on extinguishment of related party convertible promissory note

	Three Months Ended March 31,			
	2017	2018	$ Change	% Change
	(in thousands)			
Loss on extinguishment of related party convertible promissory note	$ –	$(2,180)	$(2,180)	(100)%

The $2.2 million loss on extinguishment of related party convertible promissory note in the three months ended March 31, 2018 is associated with the unamortized debt discount of the January 2017 Note upon its repayment in March 2018.

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 revenue has 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.

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 March 31, 2018, 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 $68.1 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 and March 31, 2018, our principal source of liquidity was cash and cash equivalents in the amount of $1.7 million, $4.2 million and $2.9 million, respectively. 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 and the three months ended March 31, 2017 and 2018, we had net losses of $13.9 million, $18.8 million, $5.7 million and $7.9 million, respectively. As of December 31, 2016 and 2017 and March 31, 2018, we had an accumulated deficit of $168.5 million, $187.2 million and $195.1 million, respectively. 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 was received in the first quarter, and commitments of $4.0 million of additional funding in the aggregate from FCMI

Parent and another investor, which were received in the second 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;
- revenue 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,		Three Months Ended March 31,	
	2016	2017	2017	2018
	(in thousands)			
Cash used in operating activities	$ (19,720)	$ (21,387)	$ (4,634)	$ (5,165)
Cash used in investing activities	(793)	(68)	–	(47)
Cash provided by financing activities	16,357	23,974	3,979	3,956

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 three months ended March 31, 2018, operating activities used $5.2 million in cash, primarily as a result of our net loss of $7.9 million, aggregate non-cash items of $2.2 million, and $0.5 million net change in our operating assets and liabilities. Non-cash items included a $2.2 million loss from unamortized debt issuance cost upon the repayment the $4.0 million January 2017 Note in March 2018, a $0.3 million gain in fair value change of derivative liabilities, a $0.2 million amortization of debt discount related to the convertible promissory notes, a $0.1 million depreciation expense and a $36,000 of stock-based compensation expense. The net change in our operating assets and liabilities was primarily the result of a $0.3 million increase in accrued liabilities mainly attributable to increased clinical trial related accruals, a $0.3 million increase in accounts payable due to increased clinical trial activities and initial public offering readiness activities, partially offset by a $0.1 million increase in prepaid and other current assets as we made payments for clinical trial related expense, and a $0.1 million decrease in deferred revenue as a result of the amortization of upfront payments from our collaboration agreements entered in December 2017.

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 a $3.7 million gain in fair value of derivative liabilities, a $1.2 million amortization of debt discount related to the convertible promissory notes, a $0.3 million of stock-based compensation expense and a $0.2 million depreciation expense. The net change in our operating assets and liabilities was primarily the result of a $0.6 million decrease in accounts payable and a $0.3 million decrease in prepaid and other current assets as we made payments for clinical trial related expense, partially offset by a $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 a $1.7 million net change in our operating assets and liabilities. Non-cash charges included a $1.6 million in amortization of promissory notes, a $0.2 million depreciation expense and a $0.1 million stock-based compensation expense, partially offset by a $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 a $1.1 million increase in accrued expenses, a $0.4 million increase in accounts payable, a $0.3 million increase in prepaid expenses and other current assets, partially offset by a $0.1 million decrease in accounts receivable.

Investing Activities. Cash used in investing activities during the years ended December 31, 2016 and 2017, and the three months ended March 31, 2018 of $0.8 million, $0.1 million and $47,000, respectively, resulted from capital expenditures to purchase property and equipment.

Financing Activities. During the three months ended March 31, 2018, financing activities provided $4.0 million primarily attributable to the capital contribution from noncontrolling interests of $8.0 million partially offset by a $4.0 million repayment of a convertible promissory note.

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.

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.

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. On March 8, 2018, we repaid the $4.0 million January 2017 Note. As of March 31, 2018, the June 2016 Note to a related party in the amount of $1.5 million remained outstanding.

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 $18.20 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 June 2016 Note is, and all of the convertible promissory notes were, allowed to be prepaid, plus accrued interest if applicable, without penalty. We intend to use part of the net proceeds from this offering to repay the June 2016 Note and accrued interest in full.

Capital Contributions 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 net of certain related expenses. On February 28, 2018, May 15, 2018 and June 12, 2018, the Services Agreement was amended to provide for additional payments of $8.0 million, $2.0 million and $2.0 million, respectively, 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 capital

contributions made to VX3 by its partners (i.e. the Canadian investors) divided by $18.20 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, or VIE, in which we are the primary beneficiary. As such, we recorded the gross proceeds of $12.0 million and $8.0 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 and the three months ended March 31, 2018, respectively.

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 7 of our consolidated financial statements. Amount includes both principal and interest.
(2) Represents future minimum lease payments under our operating lease for our facility 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.

During the three months ended March 31, 2018, we repaid the January 2017 Note, thereby decreasing our contractual obligations associated with convertible promissory notes due between one and three years by $4.0 million. Other than the repayment of the January 2017 Note, there were no significant changes to our contractual obligations in the three months ended March 31, 2018.

Off-Balance Sheet Arrangements

During the years ended December 31, 2016 and 2017 and the three months ended March 31, 2018, 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. See "Implications of Being an Emerging Growth Company" for more information.

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, $0.3 million, $32,000 and $36,000 during the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018, respectively. As of December 31, 2017 and March 31, 2018, we had $0.2 million and $0.6 million of total unrecognized stock-based compensation costs which we expect to recognize over a weighted-average period of 1.9 and 3.5 years, respectively.

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 that have been granted from time to time was determined by our board of directors with respect to each particular grant, 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 noted in the table below, 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 D redeemable preferred stock equity financing and capital contribution from VX3 noncontrolling interests. Under the market approach, comparable initial public offerings listed in 2016 and 2017 were 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.

Our board of directors has granted the following stock options with the offering exercise prices and fair values since January 1, 2016.

Grant Date	Number of Shares Granted	Exercise Price Per Share	Fair Value Per Share of Common Stock
August 11, 2016	13,000	$ 13.60	$ 13.60
September 12, 2016	4,000	13.60	13.60
May 15, 2017	2,000	13.60	13.60
May 22, 2017	500	13.60	13.60
August 29, 2017	500	13.60	13.60
September 5, 2017	750	13.60	13.60
September 14, 2017	1,500	13.60	13.60
September 15, 2017	27,826	13.60	13.60
October 9, 2017	750	13.60	13.60
November 27, 2017	150	13.60	13.60
January 2, 2018	1,000	13.60	21.10
February 21, 2018	25,000	13.60	21.10
February 26, 2018	2,000	13.60	21.10

Based on the initial public offering price per share of $12.00, the aggregate intrinsic value of our outstanding stock options as of March 31, 2018 was $1.4 million, of which $1.3 million and $0.1 million related to stock options that were vested and unvested, respectively, at that date.

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 or other relevant determination date, 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, we are required to remeasure our 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 and March 31, 2018, 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 March 31, 2018, 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 August 9, 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

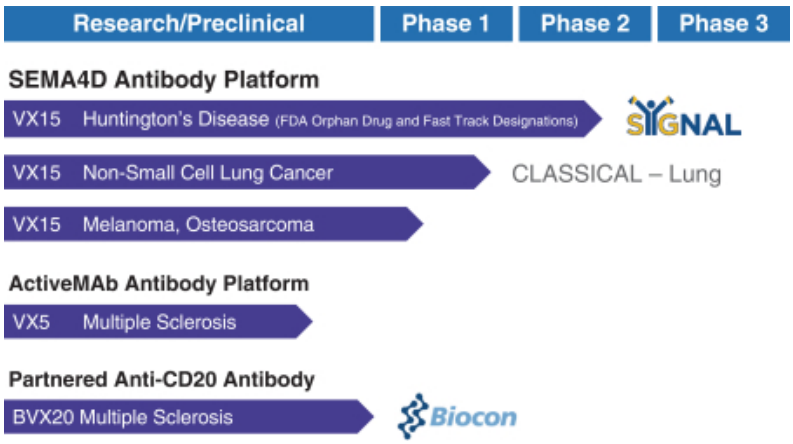
We are a clinical-stage biotechnology company engaged in the discovery and development of targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, including cancer, neurodegenerative diseases, and autoimmune disorders. We believe we are the leader in the field of SEMA4D 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 MS and potentially for other 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.

Vaccinex 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. VX5 is a human antibody to CXCL13, a molecule that regulates the formation of immune tissues, and is currently in preclinical development for the treatment of MS and potentially for other autoimmune disorders. VX25, a bi-specific NKT cell stimulator, is being evaluated in various preclinical cancer models and seeks to address challenges for the therapeutic application of NKT cell stimulation for cancer immunotherapy. 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. As of August 3, 2018, 297 patients have been treated or enrolled in five Phase 1 clinical trials and one Phase 2 clinical trial of VX15 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. 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 June 2018, an IST of VX15 in combination with *Yervoy* and with *Opdivo* began at the UCLA 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. One hundred forty-six of a planned 240 patients have been enrolled in Cohort B as of August 3, 2018, and the estimated primary completion date is the third quarter of 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 for the treatment of MS and potentially for other 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 MS and rheumatoid arthritis.

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 efficiently discover 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 the primary completion date is the fourth quarter of 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 146 of a planned 240 patients have been enrolled in Cohort B as of August 3, 2018. The estimated primary completion date is the third quarter of 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 MS and potentially for other 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	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 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 also does not convey rights or a license to us to either manufacture or sell avelumab, a Merck KGaA compound. All clinical data, including raw data and results, generated under this agreement will be jointly owned by us and Merck KGaA. 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

In June 2018, we entered into an Investigator Sponsored Clinical Trial Agreement, or ISTA, with the University of California Los Angeles Jonsson Comprehensive Cancer Center. We will 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 under a separate agreement with UCLA. The Cancer Center will own the clinical data generated from this IST, and we will have the right to access and use this data for any lawful purpose. We will provide funding for site clinical operations and clinical laboratory testing of patient samples at Covance Central Labs. The estimated primary completion date for this IST is the second half of 2020.

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. CHOP, on behalf of COG, will own the clinical data developed or obtained in connection with this IST, except that we will own data developed by or obtained from us or on our behalf and that Vaccinex and CHOP, on behalf of COG, will jointly own certain pharmacokinetic and pharmacodynamic data and biomarker analysis data. We possess an exclusive right under the agreement to purchase any of the data owned by CHOP. 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 limited funding for site clinical operations prior to resection and clinical laboratory testing of patient samples. Emory University will own the clinical data resulting from this IST, and we will have the right to access and use this data for any lawful purpose. 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. We will retain ownership of all clinical data generated from this agreement, while HSG and its subcontractors, including the clinical sites, will have the right to use limited data generated from the study for internal educational and non-commercial purposes. No license rights to VX15 are conveyed to HSG by this agreement.

VX15 in Cancer

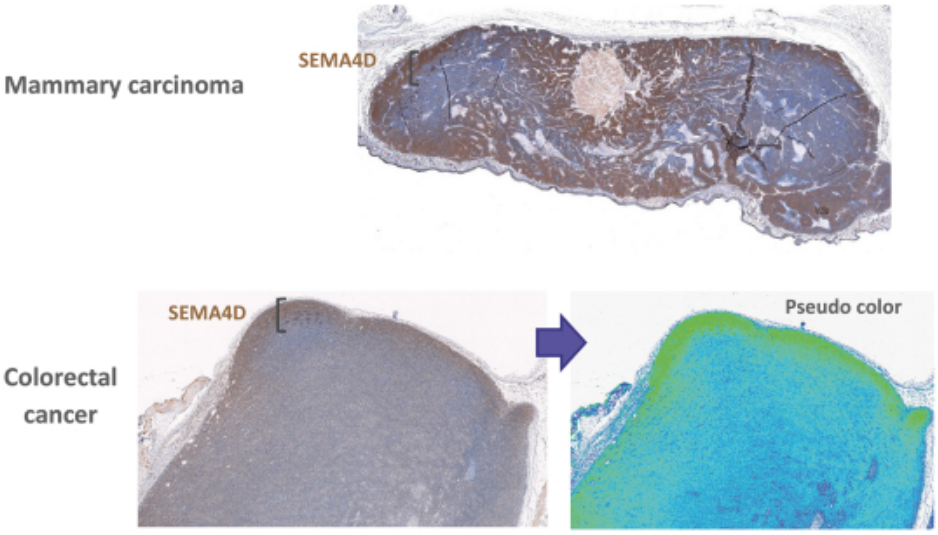
Overview

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.

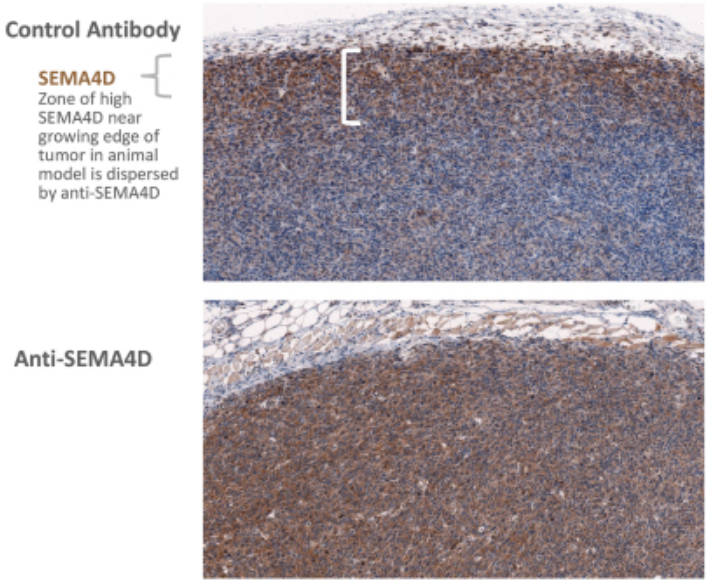
Figure 1. SEMA4D Expression Concentrated at Tumor Growing Edge



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.

Figure 3. Anti-SEMA4D Antibody Increases Cytotoxic T Cells in Tumor

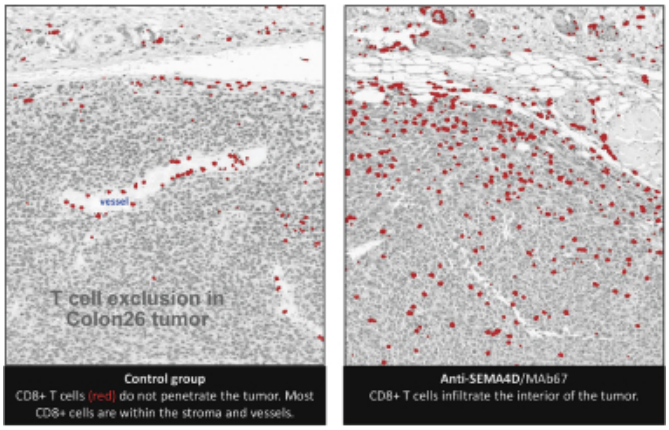
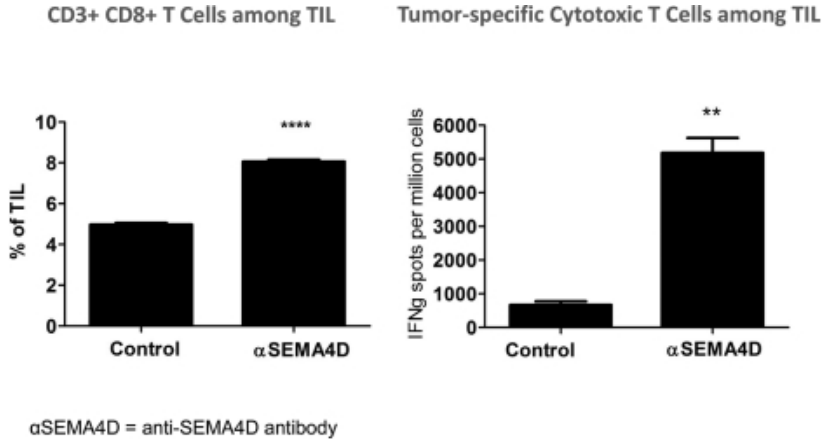


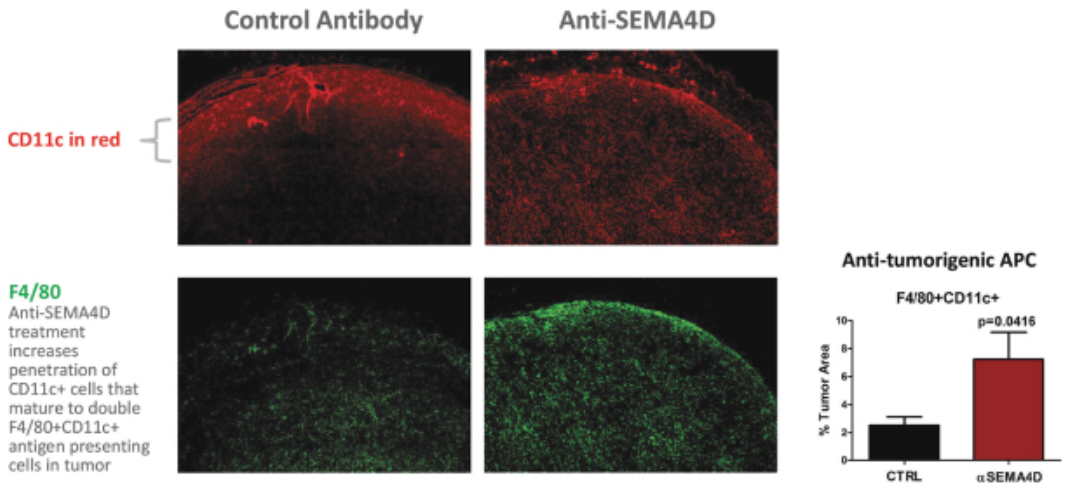
Figure 4. Anti-SEMA4D Antibody Enhances Tumor-specific Cytotoxic TIL



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.

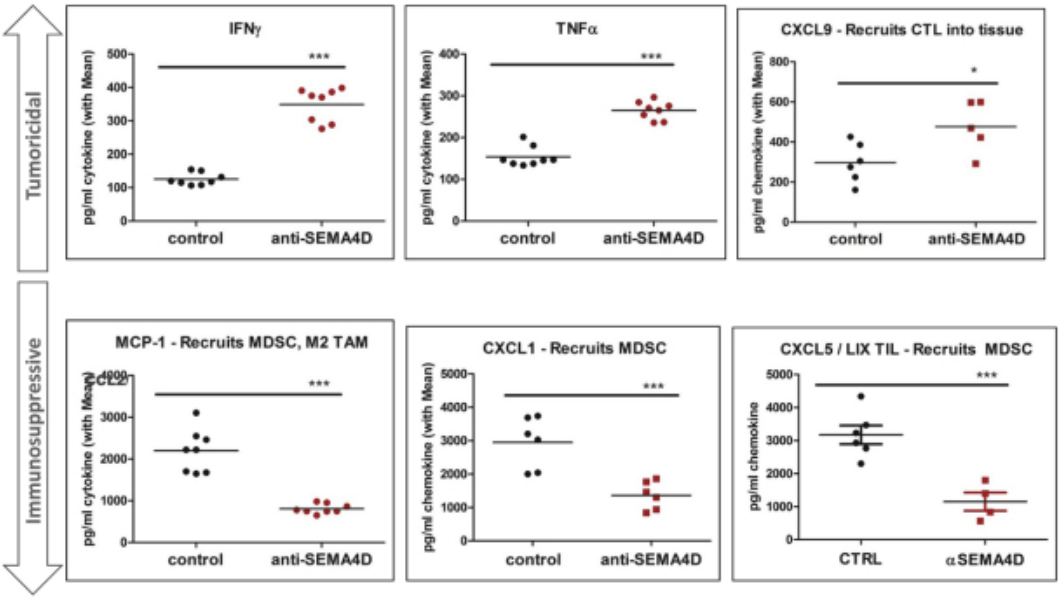
Figure 5. SEMA4D Gradient at Invasive Tumor Margin Regulates Migration and Maturation of Antigen Presenting Cells



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.

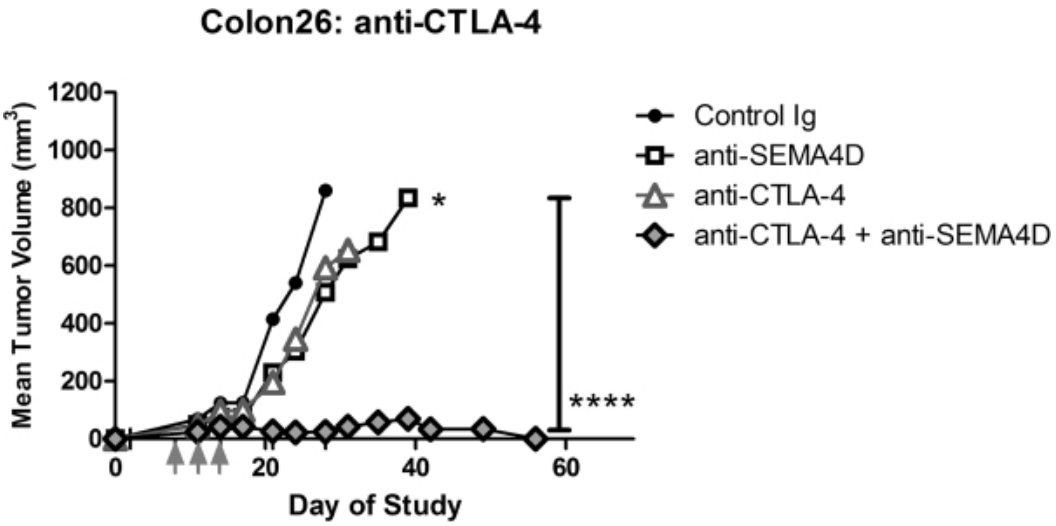
Figure 6. Anti-SEMA4D Treatment Shifts the Balance of Cytokines and Chemokines in the Tumor Microenvironment



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. Five separate studies performed by us showed tumor regression in on average approximately 80% and as high as 100% of mice 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).

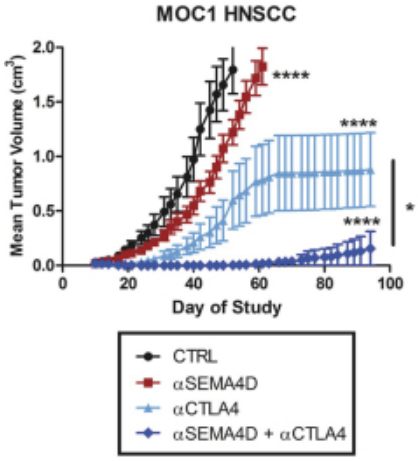
Figure 7A. Combination Treatment with Anti-CTLA-4 and Anti-SEMA4D in a Colorectal Tumor



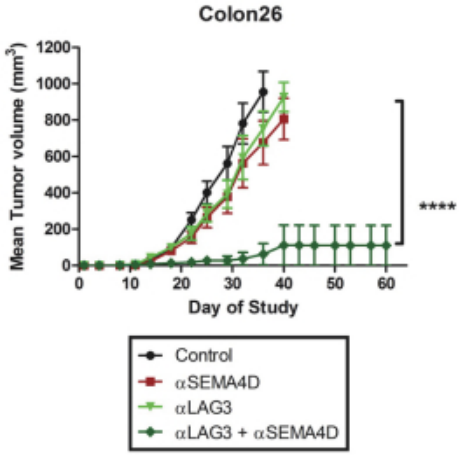
Single agent treatments (anti-SEMA4D and anti-CTLA-4) induce a modest inhibition of tumor growth but act synergistically in combination (anti-CTLA-4 + SEMA4D) to cause tumor regressions.

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.

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.

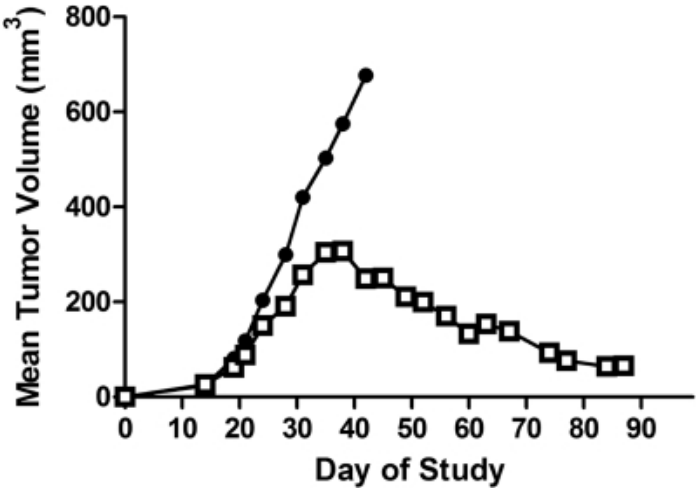
In preclinical studies, we determined that VX15 in combination with the CTLA-4 checkpoint inhibitor can greatly enhance the immune response to tumors by amplifying the benefits of such checkpoint inhibitor. In preclinical tumor models, VX15 demonstrated synergy in combination with anti-CTLA-4 for inhibition 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

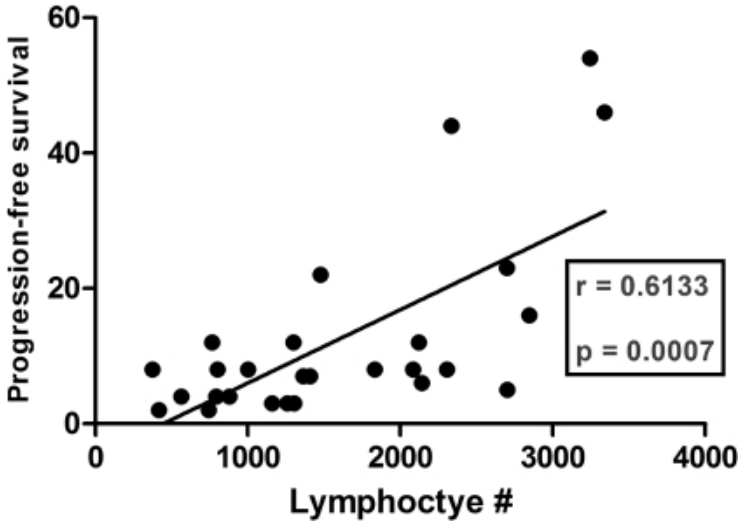
We and others have shown in preclinical studies that SEMA4D protein is highly expressed in the majority of the solid tumors evaluated, including gastrointestinal, head and neck, breast, lung, ovarian, skin, pancreatic, urogenital and sarcoma, including osteosarcoma. The results of these studies reveal 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.



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. 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 appeared to be well tolerated in this study, as well as in a separate Phase 1 clinical trial of single-ascending doses up to 20 mg/kg in 50 patients with MS in which no DLTs were observed. Furthermore, in both short and longer term preclinical animal toxicology studies in monkeys and rodents, the VX15 was well tolerated 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. The estimated primary completion date of this clinical trial is the fourth quarter of 2019.

It is contemplated that the study will enroll 40 patients to be treated with escalating doses of VX15 at 5, 10 and up to 20 mg/kg in combination with 10 mg/kg of avelumab every two weeks until confirmed disease progression, unacceptable toxicity, or the subject withdraws consent for further treatment. In some cases, subjects may continue study treatment despite apparent disease progression based on iRECIST guidelines, provided there are no new or worsening symptoms and no change in performance status. The primary objective is to evaluate safety and tolerability of the recommended Phase 2 dose of VX15 administered in combination with 10 mg/kg avelumab every two weeks. A secondary objective is to obtain a preliminary estimate of efficacy using objective response, duration of response and progression-free survival in accordance with Response Evaluation Criteria in Solid Tumors, or RECIST, 1.1.

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.

It is contemplated that the study will enroll 36 patients to be treated with VX15 at 20 mg/kg every two weeks until either confirmed disease progression or unacceptable toxicity. The primary objectives of this Phase 1 clinical trial are to define and describe the toxicities of VX15 administered on this schedule and to characterize the pharmacokinetics of VX15 in pediatric patients with recurrent or refractory cancer.

Melanoma

In June 2018, an IST of VX15 in combination with *Yervoy* and in combination with *Opdivo* began at the UCLA Jonsson Comprehensive Cancer Center in patients with advanced melanoma who have progressed on prior anti-PD-1/PD-L1 based therapies.

It is contemplated that the study will enroll up to 60 patients to be treated with escalating doses of VX15 at 10 and 20 mg/kg in combination with 480 mg/kg of nivolumab every 4 weeks or with VX15 at 10 and 20 mg/kg in combination with 3 mg/kg of ipilimumab every 3 weeks for 4 cycles and then continuing with VX15 alone every four weeks until, in all cases, confirmed disease progression, unacceptable toxicity, or the subject withdraws consent for further treatment or requires another form of antineoplastic therapy as determined by the investigator. In some cases, subjects may continue study treatment despite apparent disease progression based on iRECIST guidelines, provided there are no new or worsening symptoms and no change in performance status. The primary objectives are to determine (i) the safety and tolerability of the combination of VX15 with nivolumab, or ipilimumab, in melanoma patients who have progressed on anti-PD-1/PD-L1 based checkpoint inhibitors; and (ii) the recommended phase 2 dose and schedule of the combination of VX15 with nivolumab, or ipilimumab. Secondary objectives are to (x) define the adverse event profile for the agent combinations and determine attribution (i.e., drug related adverse events); (y) evaluate clinical response of patients treated with maximum tolerated dose or maximum administered dose of the combination of anti-SEMA4D with nivolumab, or ipilimumab by objective response rate as determined by RECIST 1.1 criteria; and (z) evaluate whether adding anti-SEMA4D to PD-1 or CTLA-4 blockade can increase T-cell infiltration into tumors and whether change in T-cell infiltration is associated with response. The estimated primary completion date of this IST is the second half of 2020.

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

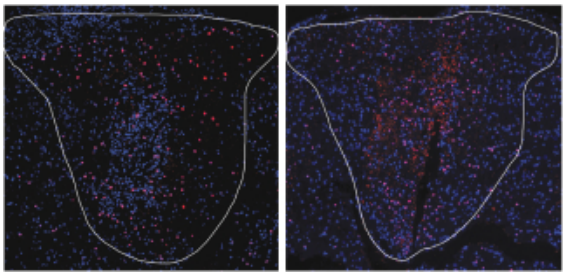
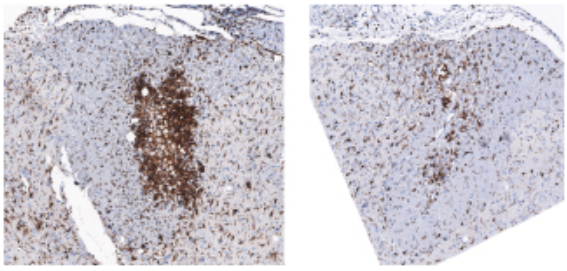


Figure 11. VX15 Inhibits Activation of Microglia



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.

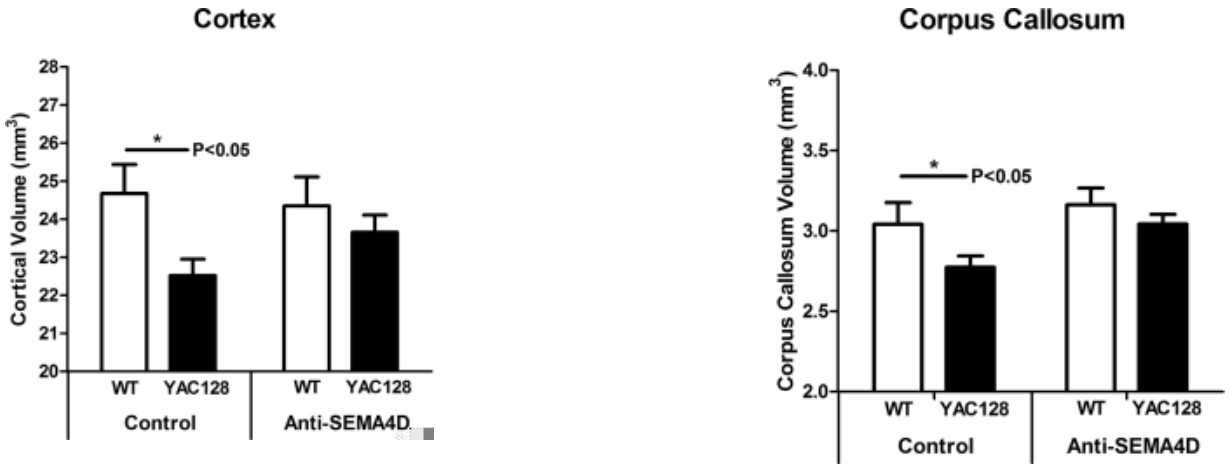
Clinical Development of VX15 in Neurodegenerative Indications

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

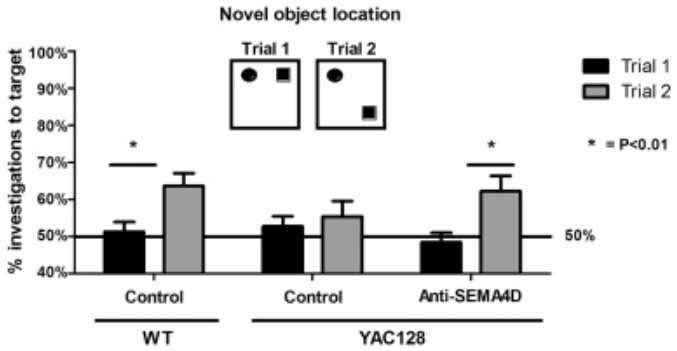


Cortical (grey matter) volume and Corpus Callosum (white matter) volume were determined in transgenic (YAC128) and WT control mice that had been treated with either control or VX15 antibody from six weeks of age until sacrifice at 12 months. Open bars are normal mice, closed bars are YAC128 mutant mice.

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 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 the drug until month 12. Enrollment in a second cohort, Cohort B, was initiated starting immediately following enrollment of Cohort A, and 146 of a planned 240 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 the third quarter of 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.

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

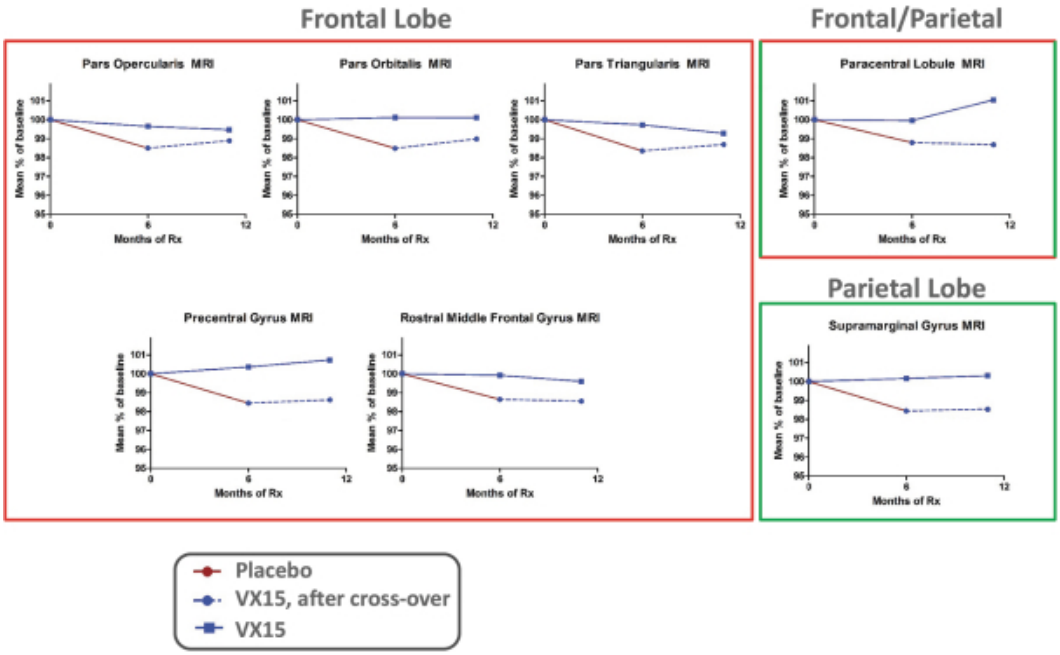


Figure 15 shows graphical representations of changes in FDG-PET signal as a percentage of baseline over the full 11-month treatment period for the regions of frontal and parietal lobes that showed the largest consistent treatment effects. The VX15-treated group (blue line) shows an initial increase in metabolic activity (FDG-PET signal) during the first six months, which in six of the nine regions, as indicated by an asterisk (*), is statistically significant with a p-value of less than 0.05, 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, which parallels in magnitude and significance the change seen following the initial six months of treatment in the VX15-treated group. Statistical significance means that a result is unlikely to have occurred by chance, and the p-value is the probability that the difference between two data sets was due to chance. The smaller the p-value, the more likely the differences are not due to chance alone. In drug development, preclinical 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. The FDA generally considers a p-value of less than or equal to 0.05 to be statistically significant.

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

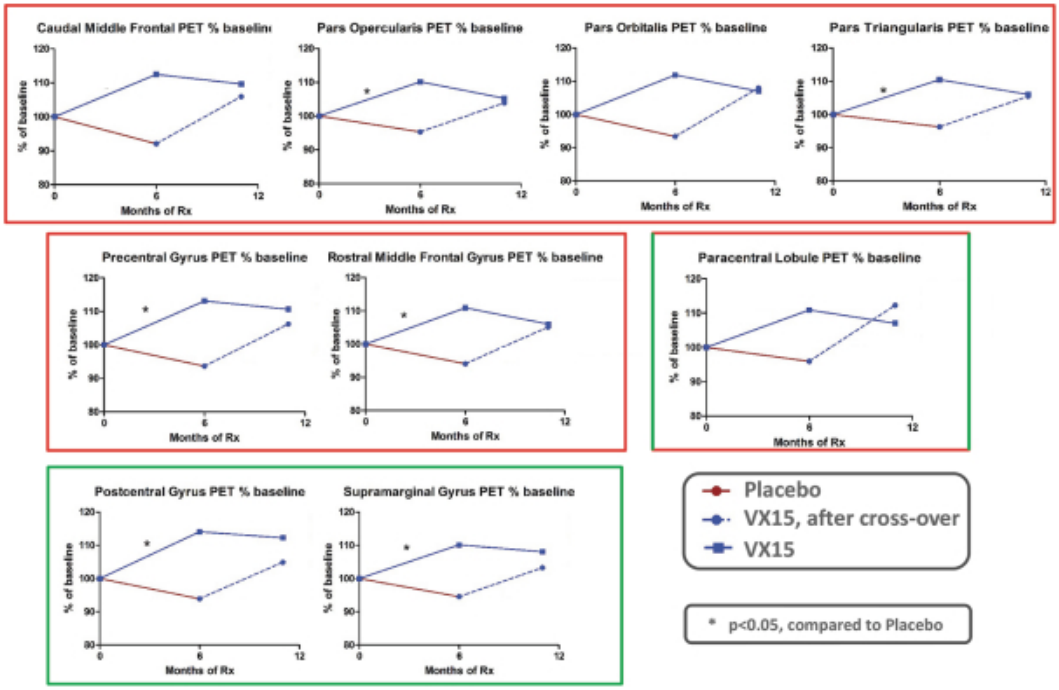


Figure 15 indicates statistically significant changes in FDG-PET uptake for six of nine regions and a consistent trend of increase in volumetric MRI in multiple cortical regions.

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 MS and potentially for other 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 is designed to include complementary DNA, or cDNAs, of interest in recombinant vaccinia viruses and to enable 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 is intended to have 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 MS and potentially for other 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 our 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. We expect delivery of the selected antibodies in the fourth quarter of 2018.

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, China, 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 United Kingdom, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden, and Switzerland), Israel, Japan (two patents), South Korea, Mexico (two patents), New Zealand (two patents), Singapore, and South Africa, and pending in Australia, Brazil, Canada, China, 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, Eurasia (validated in Russia), Mexico, Europe (validated in Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, the United Kingdom, Italy, Luxembourg, the Netherlands, Norway, Portugal, and Sweden), New Zealand, South Africa, and Singapore, and pending in the United States, Brazil, Canada, China, Israel, Japan (two applications), South Korea, Thailand, and Vietnam (two applications)); (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 Australia, the United States, New Zealand, and South Africa, and pending in Canada); (iv) methods of promoting neurogenesis and treating stroke (projected expiration of May 2033; granted in Australia, New Zealand, Japan, and Singapore, allowed in 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 (two applications), 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 Patent Cooperation Treaty, or 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, international application under the PCT filed March 14, 2018); and (x) a fully-human anti-SEMA4D antibody VX18 (projected expiration May 2038, international application under the PCT filed May 4, 2018).

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 (validated in Austria, Belgium, Switzerland, Germany, Denmark, Finland, France, the United Kingdom, Ireland, Italy, the Netherlands, Norway, Sweden, Spain, and Portugal), 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), Australia, Eurasia (validated in Russia), New Zealand, and China, 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 (two patents), Canada, China, Europe (validated in Austria, Belgium, Switzerland, the United Kingdom, and Germany), 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 (validated in Belgium, Switzerland, Germany, Denmark, Finland, France, the United Kingdom, Ireland, the Netherlands, Norway, and Sweden), Japan, Mexico, New Zealand, Singapore, South Korea, and the United States, and is pending in the United States, Brazil, Canada, and India. 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, Australia, China, Japan, and New Zealand, is allowed and Europe, and is pending in Canada, India, and South Korea. 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 Japan, and is pending in Australia, Canada, China, Europe, 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 (validated in Germany, France, and the United Kingdom), Israel, India, Japan (two patents), South Korea, New Zealand and the United States (two patents). 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, a second application is allowed in the United States, and this family is pending in 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, China, Europe (to be validated in Austria, Belgium, Denmark, Finland, France, German, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and Liechtenstein, and the United Kingdom), India, Japan, New Zealand, and the United States, and is pending in Canada, China, 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 (validated in Germany, France, and the United Kingdom) 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 (validated in Germany, France, and the United Kingdom), 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 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.

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 August 9, 2018, we had 44 full-time employees and no part-time employees. Of the full-time employees, 35 were primarily engaged in research and development activities and 15 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, 2020.

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 D. 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, which had principal balances of $97,184,800 and $70,000,000, 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.

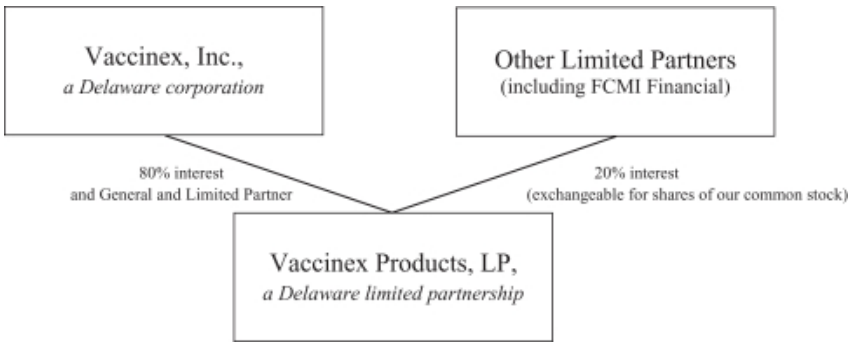
During 2012, VX1 transferred its rights to continue to develop antibodies to VX2 and the VX1 noncontrolling investors were given the option to exchange, at any time, their interests in VX1 for shares of our common stock. Also during 2012, FCMI Parent invested $12.0 million of additional funds in VX2. In June 2012, FCMI Parent, as the assignee of FCMI Financial, exchanged an approximate 47.8% interest in VX1 for 247,342 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 41,720 shares of our common stock. As a result of these exchanges, we then owned 55.8% of the interests in VX1.

In October 2014, pursuant to a series of transactions we refer to as the Reorganization, we reorganized 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. As successor to Products LLC, we triggered a conversion of the return-oriented securities that had their original principal balances, plus certain accrued but unpaid annual payment obligations, that had previously been held by Products LLC into partnership interests in VX1 and VX2. We created a new partnership, Vaccinex Products, and VX1 and VX2 were consolidated with and into Vaccinex Products, pursuant to which VX1 and VX2 partnership interests were converted into a single class of limited partnership interests of Vaccinex Products. As a result of the Reorganization, Vaccinex Products retains the combined license rights previously held by VX1 and VX2 through an amended license agreement with us and we are currently 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 amended 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 1-for-10 basis into shares of our common stock. To date, no such non-controlling investors have elected to convert their Vaccinex Products units into shares of our common stock. The exchange agreement also provides that in the event FCMI Financial exercises its option to exchange all, but not less than all, of 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 1,202,566 shares of our common stock, of which 967,983 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 in connection with the filing of a BLA or the receipt of regulatory approvals in the United States and/or Canada, as applicable. In addition, VX3 is entitled under the VX3 License Agreement to a share of any VX15 profits and sublicensing revenue in an amount obtained by multiplying the profits and sublicensing revenue, respectively, by a fraction, the numerator of which is the sum of (A) the aggregate capital contributions made to VX3 by its limited partners and (B) the aggregate milestone payments paid to the company under the VX3 License Agreement and the denominator of which is the sum of (1) $130 million and (2) the aggregate costs incurred by the company for the VX15 development costs incurred by the company since the effective date of the VX3 License Agreement, and the company is entitled to the remainder of the profits and sublicensing revenue. 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 net of certain related expenses. On February 28, 2018, May 15, 2018 and June 12, 2018, the Services Agreement was amended to provide for additional payments of $8.0 million, $2.0 million and $2.0 million, respectively, from VX3 to us 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 capital contributions made to VX3 by its partners (i.e. the Canadian investors) divided by $18.20 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 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 the parties agreed, immediately prior to the consummation of this offering, to 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, when entered into, 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 August 9, 2018.

Name	Age	Position
Non-Employee Directors		
Albert D. Friedberg	71	Chairman of the Board of Directors
Alejandro M. Berlin, M.D., MSc(2)	36	Director
Alan L. Crane	54	Director
Jacob B. Frieberg(1)(2)(4)	62	Director
J. Jeffrey Goater(1)(3)	43	Director
Bala S. Manian, Ph.D.(3)	73	Director
Gerald E. Van Strydonck(1)	73	Director
Barbara Yanni(2)(3)	64	Director
Executive Officers		
Maurice Zauderer, Ph.D.	73	President, Chief Executive Officer and Director
Scott E. Royer, CFA, MBA	44	Chief Financial Officer
Raymond E. Watkins	60	Senior Vice President and Chief Operating Officer
John E. Leonard, Ph.D.	71	Senior Vice President, Development
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.

Non-Employee 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 M.S. 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 at Polaris Partners, a technology- and healthcare-focused venture capital firm, and currently holds the title entrepreneur partner. Since September 2016, he served as Chairman of Pandion Therapeutics, Inc., a privately held biotechnology company for which he served as President from September 2016 until August 2017. From May 2011 until March 2018, he 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, L.L.C., a privately held biotechnology company for which he served as Chairman from April 2013 until November 2016. 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 boards of multiple privately held life science companies including KSQ Therapeutics, Inc., Visterra, Inc. (where he also serves as Chairman), Navitor Pharmaceuticals (where he also serves as Chairman), Seventh Sense Biosystems, Inc., and Pandion Therapeutics, Inc. 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 Chief Executive Officer and a director of Surface Oncology, Inc., a publicly traded immunotherapeutics company. Mr. Goater served as Secretary of Surface from February 2017 to February 2018. Prior to Surface, Mr. Goater served as Chief Business Officer and held other senior business and finance positions at Voyager Therapeutics, Inc., a publicly traded gene therapy company, from September 2013 to December 2016. Prior to that, he served as Vice President of Business Development at Synageva BioPharma Corp., a biopharmaceutical company (acquired by Alexion Pharmaceuticals, Inc.) from April 2013 to July 2013, and prior to that, he worked as an investment banker at Evercore Partners Inc. (now Evercore, Inc.) from April 2008 to April 2013, most recently as Managing Director. Prior to that, Mr. Goater worked as an equity research analyst at Cowen and Company, LLC, covering the biopharmaceutical sector, from August 2004 to March 2008. Mr. Goater received a B.A. in Biology, an M.S. in Pathology, an M.S. in Microbiology and Immunology and an MBA, all 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 Geneseo, 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, six 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 serve in place of those directors whose terms expire, such successors to serve until the third annual meeting following such 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 Stock Market Rules, or the NASDAQ Listing Rules, requires that independent directors comprise 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.

Prior to this offering, 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, Mr. Goater 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 concerning 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 intends to 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, cash investment strategy and results, and risks related to information technology and data security, 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. We have determined that Mr. Goater is not independent as that term is defined under the rules and regulations of NASDAQ. The phase-in rules set forth in NASDAQ Listing Rule 5615(b)(1), and in Rule 10A-3(b)(1)(iv)(A) of the Exchange Act with respect to audit committees, allow a company listing its securities on NASDAQ in connection with its initial public offering to phase in its compliance with

NASDAQ's independent committee requirements such that all members of the committees shall be independent within one year of listing. We intend to rely on this phase-in period with respect to our nominating and corporate governance committee and audit 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, Frieberg and Goater, and Mr. Van Strydonck serves as chair of the audit committee. Each member of the audit committee, except for Mr. Goater, 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 Mr. Frieberg, 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. 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 provided that until all members of our nominating and corporate governance committee are independent, the independent directors of our board of directors will be responsible for making recommendations to our board regarding candidates for directorships. 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, except for Mr. Goater, 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.	18,000	–	10.00	12/23/2019
	2,589	–	14.90	3/31/2024
	2,589	–	14.90	6/30/2024
	1,995	1,330(1)	7.10	12/23/2025
Raymond E. Watkins	36,804	–	7.10	12/22/2025
	2,770	1,847(1)	7.10	12/23/2025
Ernest S. Smith, Ph.D.	40,729	–	7.10	12/22/2025
	3,066	2,044(1)	7.10	12/23/2025

(1) These options vest in two equal installments on the anniversary of the grant date, on December 23, 2018 and December 23, 2019.

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

We have not entered into employment, severance, or change-in-control agreements, contracts, or arrangements with any of our officers or directors, except for standard form employee confidentiality and nondisclosure agreements with our employees, including each of our named executive officers. Any future employment, severance, or change-in-control agreements, contracts, and arrangements will be subject to the discretion of our board of directors and/or compensation committee, as applicable.

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

Our board of directors has adopted and our stockholders have approved the 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 become effective upon the filing of the request for acceleration of effectiveness of the registration statement of which this prospectus is a part and 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. 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 "independent" for purposes of the independence requirements of The NASDAQ Stock Market. 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, consultants and advisors who perform services for us and our affiliates, and any other individual whose participation is determined to be in our best interests by our compensation committee may receive awards under the 2018 Plan, other than incentive stock options.

Share Authorization. We will reserve 425,000 shares of common stock for issuance under 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 as of the effective date, 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 2% of the total number of issued and outstanding shares of our common stock as of December 31st of the immediately preceding year or such lesser number as our board of directors may decide, which may be zero. In connection with stock splits, dividends, recapitalizations and certain other events, our compensation committee 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.

Stock Options. The 2018 Plan will authorize our compensation committee to grant incentive stock options (under Section 422 of the Code) and stock options that do not qualify as incentive stock options, or non-qualified stock options. The initial 2018 Plan reserve amount 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 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 our compensation committee 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. The 2018 Plan will also authorize our compensation committee to grant 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.

Dividend Equivalents. The 2018 Plan will also authorize our compensation committee to 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.

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; (31) any other performance measure selected by our compensation committee; and (32) 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. The 2018 Plan will also authorize our compensation committee to 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 compensation committee, 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 compensation committee), 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 compensation committee may amend or terminate the 2018 Plan at any time; provided that no amendment may materially 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 ten (10) years after the date of our board of director's initial adoption of the 2018 Plan.

No Repricing. Except in connection with certain corporate transactions, our compensation committee may not, without obtaining stockholder approval: (a) amend the terms of outstanding options or stock appreciation rights to reduce the applicable exercise price; (b) cancel outstanding options or stock appreciation rights in exchange for or substitution of options or stock appreciation rights with an exercise price that is less than the exercise price of the original options or stock appreciation rights; or (c) cancel outstanding options or stock appreciation rights with an exercise price above the current stock price in exchange for cash or other securities.

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 June 30, 2018, a total of 409,808 shares of our common stock had been authorized for issuance under the 2011 Plan. As of June 30, 2018, stock options to purchase a total of 381,199 shares of our common stock were issued and outstanding and 35,591 shares remained available for future grant under the 2011 Plan. 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 June 30, 2018, stock options to purchase a total of 22,500 shares of our common stock were issued and outstanding under the 2001 Plan.

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 60 days 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. In addition, an employee or officer with at least one year of service whose employment is terminated under similar circumstances but not related to a "change in control" may become entitled to a discretionary severance benefit under the Severance Pay Plan. 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 July 2018, 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 $35,000. 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 the effectiveness of the registration statement of which this prospectus is a part, will receive a one-time initial award of stock options to purchase approximately $64,000 (determined using the Black-Scholes method) of our common stock, which will fully vest on the one year anniversary of the grant date, 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 $40,000 (determined using the Black-Scholes method) of our common stock, which will fully vest on the one year anniversary of the date of grant, 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 11 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 6,396 shares of our common stock at an exercise price of $13.60 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 2,239 shares of our common stock at an exercise price of $13.60 per share, which vested in full on June 20, 2018.
(4) On September 15, 2017, Mr. Van Strydonck was granted a stock option to purchase 6,396 shares of our common stock at an exercise price of $13.60 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	6,396
Alan L. Crane	41,000
Jacob B. Frieberg	6,396
J. Jeffrey Goater	8,239
Bala S. Manian, Ph.D.	–
Gerald E. Van Strydonck	18,396
Barbara Yanni	6,396

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 majority 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. None of the convertible promissory notes issued to FCMI Parent currently remain outstanding.

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 August 9, 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 completion 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 intend to use part of the net proceeds from this offering to repay the June 2016 Note and accrued interest in full.

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.

Financing Arrangements Concerning 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, which is a wholly owned, indirect subsidiary of FCMI Parent. We incurred rent of $168,000 under this lease for each of the years ended December 31, 2015, 2016 and 2017 and $42,000 for the three months ended March 31, 2018. The lease agreement requires monthly rental payments of $14,000 through expiration of the lease on October 31, 2020.

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. In addition, up to approximately $223,000 in additional amounts may be payable to us in connection with research to be performed under the agreement and $350,000 if Surface exercises its options to obtain exclusive licenses under the agreement, including a license to make, use, sell, and import products incorporating the antibody targeting the first antigen, and a license to use the antibody targeting the second antigen to perform research activities. We have invoiced an aggregate of approximately $319,000 under this agreement through March 31, 2018.

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 net of certain related expenses. On February 28, 2018, May 15, 2018 and June 12, 2018, the Services Agreement was amended to provide for additional payments of $8.0 million, $2.0 million and $2.0 million, respectively, 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 capital contributions made to VX3 by its partners (i.e. the Canadian investors) divided by $18.20 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 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 the parties agreed, immediately prior to the consummation of this offering, to 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, when entered into, 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.

Participation in this Offering

Affiliates of Mr. Friedberg, including FCMI Parent, have agreed to purchase an aggregate of $29.5 million in shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on these shares as they will on the other shares sold to the public in this offering.

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 May 2018, 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 among other things 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 effectiveness 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 August 3, 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 1,103,260 shares of common stock outstanding on August 3, 2018 and assuming the conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock. We have based our calculation of beneficial ownership after this offering on 11,475,749 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 3,333,334 shares of common stock in this offering. Ownership information assumes no exercise of the underwriters' over-allotment option.

Affiliates of Albert D. Friedberg, our Chairman, including FCMI Parent, have agreed to purchase an aggregate of $29.5 million in shares of our common stock in this offering at the initial public offering price. Except as set forth in footnotes (4), (11) and (12), the following table does not reflect these potential purchases.

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 August 3, 2018. Stock options to purchase shares of our common stock and limited partnership interests that are exercisable or exchangeable within 60 days of August 3, 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	1,443,989(1)	1,443,989(1)	17.7%	12.6%
Raymond E. Watkins	47,424(2)	47,424(2)	*	**
Ernest S. Smith	59,795(3)	59,795(3)	*	**
Directors:				
Albert D. Friedberg	4,358,640(4)	5,538,691(4)	47.8%	40.7%
Alejandro M. Berlin	6,396(5)	6,396(5)	*	*
Alan L. Crane	41,000(6)	41,000(6)	*	*
Jacob B. Frieberg	15,236(7)	15,236(7)	*	*
J. Jeffrey Goater	8,539(8)	8,539(8)	*	*
Bala S. Manian	–	–	–	–
Gerald E. Van Strydonck	18,396(9)	18,396(9)	*	*
Barbara Yanni	6,396(10)	6,396(10)	*	*
All directors and executive officers as a group (13 persons)	6,036,195(11)	7,216,246(11)	64.6%	52.1%
Greater than 5% Stockholders:				
FCMI Parent Co.(12)	3,881,452(12)	5,061,503(12)	42.6%	37.2%
Antibody Investments LLC(13)	1,895,583	1,895,583	23.3%	16.5%
Vaccinex (Rochester), L.L.C.(14)	815,698	815,698	10.0%	7.1%

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

(1) Includes (a) presently exercisable stock options for 25,173 shares of our common stock, (b) 213,209 shares and 212,161 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) 815,698 shares held by Vaccinex LLC, of which Dr. Zauderer is the president and a majority owner.

(2) Includes presently exercisable stock options for 39,574 shares of our common stock.

(3) Includes presently exercisable stock options for 43,795 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. Mr. Friedberg is the majority owner of FCMI Parent and Pan Atlantic Bank & Trust Ltd. and he exercises voting and investment power over the securities held by each of such entities. The percentage of shares beneficially owned after this offering would be 58.7% assuming the purchase of all the shares affiliates of Mr. Friedberg have agreed to purchase in this offering.

(5) Includes presently exercisable stock options for 6,396 shares of our common stock.

(6) Includes presently exercisable stock options for 41,000 shares of our common stock.

(7) Includes presently exercisable stock options for 6,396 shares of our common stock and 8,840 shares issuable upon the exchange of limited partnership interests in Vaccinex Products, 4,420 of which are held by Benbow Estates, Ltd., an entity owned by Mr. Frieberg's wife and of which Mr. Frieberg is an officer.

(8) Includes presently exercisable stock options for 8,239 shares of our common stock.

(9) Includes presently exercisable stock options for 18,396 shares of our common stock.

(10) Includes presently exercisable stock options for 6,396 shares of our common stock.

(11) Includes stock options for 224,735 shares of our common stock that are presently exercisable or exercisable within 60 days of August 3, 2018 and 976,823 shares issuable upon the exchange of partnership interests in Vaccinex Products. Amount after the offering includes 1,180,051 shares issuable upon the exchange of partnership interests in VX3. The percentage of shares beneficially owned after this offering would be 69.8% assuming the purchase of all the shares affiliates of Mr. Friedberg have agreed to purchase in this offering.

(12) Includes 967,983 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 1,180,051 shares issuable upon the exchange of partnership interests in VX3. Mr. Friedberg is the majority owner, a director and the president of FCMI Parent and shares voting and investment power over the shares held by FCMI Parent. The address for FCMI Parent is 181 Bay Street, Suite 250, Toronto, Ontario Canada M5J 2T3. The percentage of shares beneficially owned after this offering would be 50.9% assuming the purchase of all the shares FCMI Parent has agreed to purchase in this offering.

(13) Michael Shumacher, Manager of Antibody Investments LLC, exercises voting and investment power over the shares held by Antibody Investments LLC. The address for Antibody Investments LLC is 7 Hartom Street, 2nd Floor, Har Hotzvim, Jerusalem, Israel 9777507.
(14) Dr. Zauderer is the president and a majority owner of Vaccinex LLC and exercises voting and investment power over the shares held by Vaccinex LLC. The address for Vaccinex LLC is 44 Woodland Road, Pittsford, New York 14534.

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 March 31, 2018, there were outstanding:

- 8,141,715 shares of our common stock held by approximately 149 stockholders, which gives effect to (i) conversion of all outstanding shares of our preferred stock into an aggregate of 7,039,155 shares of our common stock, assuming such conversion occurred on March 31, 2018; and (ii) repayment of the June 2016 Note, assuming such repayment occurred on March 31, 2018;
- 1,202,566 shares of common stock issuable upon the exchange of limited partnership interests of Vaccinex Products, of which 967,983 shares will be beneficially owned by FCMI Parent;
- 1,318,797 shares of common stock issuable upon the exchange of limited partnership interests of VX3, of which 1,180,051 shares will be owned by FCMI Parent; and
- 438,496 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 and by the relevant provisions of the DGCL. 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, it is contemplated that 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

The holders of 4,168,772 shares of our common stock outstanding as of March 31, 2018 issuable upon conversion of our Series A, Series B, Series B-1, Series B-2 and Series D redeemable convertible preferred stock may be 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 once these rights become exercisable, the holders of these shares may be entitled to include their shares in such registration, subject to certain marketing limitations. From the time these rights become exercisable 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 37,633 shares of our common stock outstanding as of March 31, 2018 may in the future 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

Once their rights become exercisable, 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 they become exercisable.

Incidental Registration Rights

In addition, if in the future we register any shares of our common stock, the holders of Series A convertible preferred stock and Series B redeemable convertible preferred stock may be 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, once their rights become exercisable, 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 Upon 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, unless our board of directors determines by resolution that any such vacancies shall be filled by stockholders. 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 current or former 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. In addition, our amended and restated certificate of incorporation will provide that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States will, to the fullest extent permitted by law, be the exclusive forum for any claim arising under the Securities Act. 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 been approved 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 March 31, 2018, upon completion of this offering, 11,475,049 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 to the extent 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, 828,699 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 114,750 shares, or 119,750 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.

Subject to the foregoing volume limitations, upon expiration of the 180-day lock-up period described below, 11,475,049 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 and the holders of substantially all of our common stock outstanding on the date of this prospectus, including each of our executive officers and directors 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, 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

The holders of 4,206,355 shares of our common stock outstanding at March 31, 2018, including shares issuable upon conversion of our preferred stock, may be entitled to certain registration rights in the future. 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 entered into an underwriting agreement with the underwriters named below on August 9, 2018. Oppenheimer & Co. Inc. is acting as the representative of the underwriters.

The underwriting agreement provides for the purchase of a specific number of shares of common stock by each of the underwriters. The underwriters' obligations are several, which means that each underwriter is required to purchase a specified number of shares of common stock, but is not responsible for the commitment of any other underwriter to purchase shares of common stock. Subject to the terms and conditions of the underwriting agreement, each underwriter has severally agreed to purchase the number of shares of common stock set forth opposite its name below:

Underwriter	Number of Shares of Common Stock
Oppenheimer & Co. Inc.	1,500,000
BTIG, LLC	1,166,667
Ladenburg Thalmann & Co. Inc.	666,667
Total	3,333,334

The underwriters have agreed to purchase all of the shares of common stock offered by this prospectus (other than those covered by the over-allotment option described below), if any are purchased.

The shares of common stock offered hereby are expected to be ready for delivery on or about August 13, 2018 against payment in immediately available funds.

The underwriters are offering the shares of common stock subject to various conditions and may reject all or part of any order. The representative of the underwriters has advised us that the underwriters propose initially to offer the shares of common stock to the public at the public offering price set forth on the cover page of this prospectus and to dealers at a price less a concession not in excess of $0.504 per share of common stock to brokers and dealers. After the shares of common stock are released for sale to the public, the representative may change the offering price, the concession, and other selling terms at various times.

We have granted the underwriters an over-allotment option. This option, which is exercisable for up to 30 days after the date of this prospectus, permits the underwriters to purchase a maximum of 500,000 additional shares of common stock from us to cover over-allotments, if any. If the underwriters exercise all or part of this option, they will purchase shares of common stock covered by the option at the public offering price that appears on the cover page of this prospectus, less the underwriting discounts and commissions. If this option is exercised in full, the total price to public will be approximately $46.0 million, and the total proceeds to us, before expenses, will be approximately $42.8 million.

The following table provides information regarding the amount of the discounts and commissions to be paid to the underwriters by us, before expenses:

	Per Share of Common Stock	Total Without Exercise of Over-Allotment Option	Total With Full Exercise of Over-Allotment Option
Public offering price	$ 12.00	$40,000,008	$46,000,008
Underwriting discounts and commissions	$ 0.84	$ 2,800,001	$ 3,220,001
Proceeds, before expenses, to us	$ 11.16	$37,200,007	$42,780,007

We estimate that our total expenses of the offering, excluding the estimated underwriting discounts and commissions, will be approximately $2,400,000. We have agreed to reimburse the underwriters for expenses related to this offering, including up to $75,000 of the representative's reasonable, documented out-of-pocket costs and expenses incident to the performance of its obligations under the underwriting agreement (including, without limitation, the reasonable fees and expenses of the underwriters' outside counsel). We have also agreed, subject to certain conditions and exceptions, to provide Oppenheimer & Co. Inc. with a right of first refusal to act, until May 23, 2019, as (i) a financial advisor in connection with any acquisition or other effort by us to obtain control of all or a significant portion of the assets or securities of a third party, or the sale or transfer by us of assets or securities, or any extraordinary corporate transaction, regardless of the form or structure of such transaction, or (ii) as an underwriter, a placement/selling agent, an initial purchaser or an arranger, as the case may be, on any company financing.

Affiliates of Albert D. Friedberg, our Chairman, including FCMI Parent, have agreed to purchase an aggregate of $29.5 million in shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on these shares as they will on the other shares sold to the public in this offering.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933.

We and the holders of substantially all of our common stock outstanding on the date of this prospectus, including each of our executive officers and directors have agreed to a 180-day "lock-up" with respect to our shares of common stock and other of our securities that they beneficially own, including securities that are convertible into shares of common stock and securities that are exchangeable or exercisable for shares of common stock. This means that, subject to certain exceptions, for a period of 180 days following the date of this prospectus, we and such persons may not offer, sell, pledge or otherwise dispose of these securities without the prior written consent of Oppenheimer & Co. Inc.

Rules of the Securities and Exchange Commission may limit the ability of the underwriters to bid for or purchase shares of common stock before the distribution is completed. However, the underwriters may engage in the following activities in accordance with the rules:

- Stabilizing transactions — The representative may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the common stock, so long as stabilizing bids do not exceed a specified maximum.
- Over-allotments and syndicate covering transactions — The underwriters may sell more shares of common stock in connection with this offering than the number of shares of common stock that they have committed to purchase. This over-allotment creates a short position for the underwriters. This short sales position may involve either "covered" short sales or "naked" short sales. Covered short sales are short sales made in an amount not greater than the underwriters' over-allotment option to purchase additional shares of common stock in this offering described above. The underwriters may close out any covered short position either by exercising its over-allotment option or by purchasing shares of common stock in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price per share of common stock available for purchase in the open market, as compared to the price at which they may purchase shares of common stock through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing shares of common stock in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price per share of common stock that could adversely affect investors who purchase shares of common stock in this offering.

- Penalty bids — If the representative purchases shares of common stock in the open market in a stabilizing transaction or syndicate covering transaction, it may reclaim a selling concession from the underwriters and selling group members who sold those shares of common stock as part of this offering.
- Passive market making — Market makers in the common stock who are underwriters or prospective underwriters may make bids for or purchases of shares of common stock, subject to limitations, until the time, if ever, at which a stabilizing bid is made.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our common stock or preventing or mitigating a decline in the market price of our 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. The imposition of a penalty bid might also have an effect on the price of the common stock if it discourages resales of our shares of common stock.

Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may occur on The NASDAQ Global Market or otherwise. If such transactions are commenced, they may be discontinued without notice at any time.

Electronic Delivery of Preliminary Prospectus

A prospectus in electronic format may be delivered to potential investors by one or more of the underwriters participating in this offering. The prospectus in electronic format will be identical to the paper version of such prospectus. Other than the prospectus in electronic format, the information on any underwriter's website and any information contained in any other website maintained by an underwriter is not part of this prospectus or the registration statement of which this prospectus forms a part.

Notice to Non-U.S. Investors

Belgium

The offering is exclusively conducted under applicable private placement exemptions and therefore it has not been and will not be notified to, and this document or any other offering material relating to the common stock has not been and will not be approved by, the Belgian Banking, Finance and Insurance Commission ("Commission bancaire, financière et des assurances/Commissie voor het Bank, Financie en Assurantiewezen"). Any representation to the contrary is unlawful.

Each underwriter has undertaken not to offer sell, resell, transfer or deliver directly or indirectly, any common stock, or to take any steps relating/ancillary thereto, and not to distribute or publish this document or any other material relating to the common stock or to the offering in a manner which would be construed as: (a) a public offering under the Belgian Royal Decree of 7 July 1999 on the public character of financial transactions; or (b) an offering of securities to the public under Directive 2003/71/EC which triggers an obligation to publish a prospectus in Belgium. Any action contrary to these restrictions will cause the recipient and the company to be in violation of the Belgian securities laws.

Canada

This document constitutes an "exempt offering document" as defined in and for the purposes of applicable Canadian securities laws. No prospectus has been filed with any securities commission or similar regulatory authority in Canada in connection with the offer and sale of the securities described herein (the "Securities"). No securities commission or similar regulatory authority in Canada has reviewed or in any way passed upon this document or on the merits of the Securities and any representation to the contrary is an offence.

Canadian investors are advised that this document has been prepared in reliance on section 3A.3 of National Instrument 33-105 Underwriting Conflicts ("NI 33-105"). Pursuant to section 3A.3 of NI 33-105, this document is exempt from the requirement to provide investors with certain conflicts of interest disclosure pertaining to "connected issuer" and/or "related issuer" relationships as would otherwise be required pursuant to subsection 2.1(1) of NI 33-105.

Resale Restrictions

The offer and sale of the securities in Canada is being made on a private placement basis only and is exempt from the requirement to prepare and file a prospectus under applicable Canadian securities laws. Any resale of Securities acquired by a Canadian investor in this offering must be made in accordance with applicable Canadian securities laws, which may vary depending on the relevant jurisdiction, and which may require resales to be made in accordance with Canadian prospectus requirements, a statutory exemption from the prospectus requirements, in a transaction exempt from the prospectus requirements or otherwise under a discretionary exemption from the prospectus requirements granted by the applicable local Canadian securities regulatory authority. These resale restrictions may under certain circumstances apply to resales of the securities outside of Canada.

Representations of Purchasers

Each Canadian investor who purchases the securities will be deemed to have represented to the issuer and to each dealer from whom a purchase confirmation is received, as applicable, that the investor (i) is purchasing as principal, or is deemed to be purchasing as principal in accordance with applicable Canadian securities laws, for investment only and not with a view to resale or redistribution; (ii) is an "accredited investor" as such term is defined in section 1.1 of National Instrument 45-106 *Prospectus Exemptions* ("NI 45-106") or, in Ontario, as such term is defined in section 73.3(1) of the *Securities Act* (Ontario); and (iii) is a "permitted client" as such term is defined in section 1.1 of National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*.

Taxation and Eligibility for Investment

Any discussion of taxation and related matters contained in this document does not purport to be a comprehensive description of all of the tax considerations that may be relevant to a Canadian investor when deciding to purchase the securities and, in particular, does not address any Canadian tax considerations. No representation or warranty is hereby made as to the tax consequences to a resident, or deemed resident, of Canada of an investment in the securities or with respect to the eligibility of the securities for investment by such investor under relevant Canadian federal and provincial legislation and regulations.

Rights of Action for Damages or Rescission

Securities legislation in certain of the Canadian jurisdictions provides certain purchasers of securities pursuant to an offering memorandum, including where the distribution involves an "eligible foreign security" as such term is defined in Ontario Securities Commission Rule 45-501 *Ontario Prospectus and Registration Exemptions* and in Multilateral Instrument 45-107 *Listing Representation and Statutory Rights of Action Disclosure Exemptions*, as applicable, with a remedy for damages or rescission, or both, in addition to any other rights they may have at law, where the offering memorandum, or other offering document that constitutes an offering memorandum, and any amendment thereto, contains a "misrepresentation" as defined under applicable Canadian securities laws. These remedies, or notice with respect to these remedies, must be exercised or delivered, as the case may be, by the purchaser within the time limits prescribed under, and are subject to limitations and defences under, applicable Canadian securities legislation. Purchasers should refer to the applicable provisions of the securities legislation of their Canadian jurisdiction for the particulars of these rights or consult with a legal adviser.

Language of Documents

Upon receipt of this document, each Canadian investor hereby confirms that it has expressly requested that all documents evidencing or relating in any way to the sale of the securities described herein (including for greater certainty any purchase confirmation or any notice) be drawn up in the English language only. *Par la réception de ce document, chaque investisseur canadien confirme par les présentes qu'il a expressément exigé que tous les documents faisant foi ou se rapportant de quelque manière que ce soit à la vente des valeurs mobilières décrites aux présentes (incluant, pour plus de certitude, toute confirmation d'achat ou tout avis) soient rédigés en anglais seulement.*

France

Neither this prospectus nor any other offering material relating to the common stock has been submitted to the clearance procedures of the Autorité des marchés financiers in France. The common stock has not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus nor any other offering material relating to the common stock has been or will be: (a) released, issued, distributed or caused to be released, issued or distributed to the public in France; or (b) used in connection with any offer for subscription or sale of the common stock to the public in France. Such offers, sales and distributions will be made in France only: (i) to qualified investors (investisseurs qualifiés) and/or to a restricted circle of investors (cercle restreint d'investisseurs), in each case investing for their own account, all as defined in and in accordance with Articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier; (ii) to investment services providers authorised to engage in portfolio management on behalf of third parties; or (iii) in a transaction that, in accordance with article L.411-2-II-1°-or-2°-or 3° of the French Code monétaire et financier and article 211-2 of the General Regulations (Règlement Général) of the Autorité des marchés financiers, does not constitute a public offer (appel public à l'épargne). Such common stock may be resold only in compliance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code monétaire et financier.

Israel

This prospectus does not constitute a prospectus under the Israeli Securities Law, 5728-1968 (the "Securities Law"), and has not been filed with or approved by the Israel Securities Authority. In the State of Israel, this document is being distributed only to, and is directed only at, and any offer of the common stock is directed only at, investors listed in the first addendum to the Israeli Securities Law (the "Addendum"), consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and "qualified individuals", each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors will be required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

Italy

The offering of common stock offered hereby in Italy has not been registered with the Commissione Nazionale per la Società e la Borsa ("CONSOB") pursuant to Italian securities legislation and, accordingly, the common stock offered hereby cannot be offered, sold or delivered in the Republic of Italy ("Italy") nor may any copy of this prospectus or any other document relating to the common stock offered hereby be distributed in Italy other than to professional investors (operatori qualificati) as defined in Article 31, second paragraph, of CONSOB Regulation No. 11522 of 1 July, 1998 as subsequently amended. Any offer, sale or delivery of the

common stock offered hereby or distribution of copies of this prospectus or any other document relating to the common stock offered hereby in Italy must be made:

(a) by an investment firm, bank or intermediary permitted to conduct such activities in Italy in accordance with Legislative Decree No. 58 of 24 February 1998 and Legislative Decree No. 385 of 1 September 1993 (the "Banking Act");

(b) in compliance with Article 129 of the Banking Act and the implementing guidelines of the Bank of Italy; and

(c) in compliance with any other applicable laws and regulations and other possible requirements or limitations which may be imposed by Italian authorities.

Sweden

This prospectus has not been nor will it be registered with or approved by Finansinspektionen (the Swedish Financial Supervisory Authority). Accordingly, this prospectus may not be made available, nor may the common stock offered hereunder be marketed and offered for sale in Sweden, other than under circumstances which are deemed not to require a prospectus under the Financial Instruments Trading Act (1991: 980).

Switzerland

The common stock offered pursuant to this prospectus will not be offered, directly or indirectly, to the public in Switzerland and this prospectus does not constitute a public offering prospectus as that term is understood pursuant to art. 652a or art. 1156 of the Swiss Federal Code of Obligations. The company has not applied for a listing of the common stock being offered pursuant to this prospectus on the SWX Swiss Exchange or on any other regulated securities market, and consequently, the information presented in this prospectus does not necessarily comply with the information standards set out in the relevant listing rules. The common stock being offered pursuant to this prospectus have not been registered with the Swiss Federal Banking Commission as foreign investment funds, and the investor protection afforded to acquirers of investment fund certificates does not extend to acquirers of common stock.

Investors are advised to contact their legal, financial or tax advisers to obtain an independent assessment of the financial and tax consequences of an investment in common stock.

United Kingdom/Germany/Norway/The Netherlands

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 by this prospectus may not be made in that Relevant Member State other than the offers contemplated in this prospectus in name(s) of Member State(s) where prospectus will be approved or passported for the purposes of a non-exempt offer once this prospectus has been approved by the competent authority in such Member State and published and passported in accordance with the Prospectus Directive as implemented in name(s) of relevant Member State(s) 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:

(a) to legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;

(b) to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than €43,000,000 and (3) an annual net turnover of more than €50,000,000, as shown in its last annual or consolidated accounts;

(c) by the representative to fewer than 100 natural or legal persons (other than qualified investors as defined in the Prospectus Directive); or

(d) 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 the publication by the company or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer 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 any common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Each underwriter has represented, warranted and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000 (the FSMA)) received by it in connection with the issue or sale of any common stock in circumstances in which section 21(1) of the FSMA does not apply to the company; and

(b) it has complied with and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the common stock in, from or otherwise involving the United Kingdom.

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 Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York.

EXPERTS

The consolidated financial statements as of December 31, 2016 and 2017 and for the years then ended 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 regarding a going concern uncertainty). 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. 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 (August 7, 2018 as to the effects of the reverse stock split described in Note 16)

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,		As of March 31,	Pro Forma as of March 31,
	2016	2017	2018	2018
			(unaudited)	
ASSETS				
Current assets:				
Cash and cash equivalents	$ 1,661	$ 4,180	$ 2,924	
Accounts receivable, net	104	117	80	
Prepaid expenses and other current assets	347	677	704	
Total current assets	2,112	4,974	3,708	
Property and equipment, net	730	601	583	
Deferred offering costs	–	–	655	
TOTAL ASSETS	$ 2,842	$ 5,575	$ 4,946	
LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT				
Current liabilities:				
Accounts payable	$ 2,456	$ 1,910	$ 2,360	$
Accrued expenses	1,984	1,957	2,728	
Deferred revenue	–	298	167	
Total current liabilities	4,440	4,165	5,255	
Convertible promissory notes to related party, net	1,037	2,813	1,228	
Derivative liabilities	694	369	61	
TOTAL LIABILITIES	6,171	7,347	6,544	
Commitments and contingencies (Note 8)				
Redeemable convertible preferred stock (Series B, B-1, B-2, C, D), par value of $0.001 per share; 56,317,000, 66,317,000 and 66,317,000 shares authorized as of December 31, 2016 and 2017 and March 31, 2018 (unaudited); 48,694,355, 53,089,959 and 53,089,959 shares issued and 48,694,192, 53,089,796 and 53,089,796 shares outstanding as of December 31, 2016 and 2017 and March 31, 2018 (unaudited) with aggregate liquidation preference of $129,050, $140,261 and $141,866 as of December 31, 2016 and 2017 and March 31, 2018 (unaudited), actual; no shares issued and outstanding as of and March 31, 2018, pro forma (unaudited)	103,736	111,718	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 and March 31, 2018 (unaudited) with aggregate liquidation preference of $7,684 as of December 31, 2016 and 2017 and March 31, 2018 (unaudited), actual; no shares issued and outstanding as of and March 31, 2018, pro forma (unaudited)	7,684	7,684	7,684	–
Common stock, par value of $0.0001 per share; 150,000,000, 160,000,000 and 160,000,000 shares authorized as of December 31, 2016 and 2017 and March 31, 2018 (unaudited); 1,101,359, 1,103,396 and 1,103,396 shares issued as of December 31, 2016 and 2017 and March 31, 2018 (unaudited); 1,100,523, 1,102,560 and 1,102,560 shares outstanding as of December 31, 2016 and 2017 and March 31, 2018 (unaudited), actual; 8,142,567 shares issued and 8,141,715 shares outstanding as of and March 31, 2018, pro forma (unaudited)	–	–	–	1
Additional paid-in capital	53,789	54,123	54,159	173,349
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 and March 31, 2018 (unaudited), actual and pro forma (unaudited)	(11)	(11)	(11)	(11)
Accumulated deficit	(168,527)	(187,249)	(195,111)	(195,111)
Total Vaccinex, Inc. stockholders' deficit	(107,065)	(125,453)	(133,279)	(21,772)
Noncontrolling interests	–	11,963	19,963	19,963
TOTAL STOCKHOLDERS' DEFICIT	(107,065)	(113,490)	(113,316)	$ (1,809)
TOTAL LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT	$ 2,842	$ 5,575	$ 4,946	

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,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
Revenue	$ 316	$ 90	$ –	$ 206
Costs and expenses:				
Cost of revenue	115	160	–	240
Research and development	16,028	16,551	3,839	4,454
General and administrative	4,432	4,483	1,070	1,221
Total costs and expenses	20,575	21,194	4,909	5,915
Loss from operations	(20,259)	(21,104)	(4,909)	(5,709)
Change in fair value of derivative liabilities	9,310	3,743	(520)	308
Interest expense	(2,990)	(1,358)	(272)	(267)
Loss on extinguishment of related party convertible promissory note	–	–	–	(2,180)
Other expense, net	(4)	(40)	(16)	(14)
Loss before provision for income taxes	(13,943)	(18,759)	(5,717)	(7,862)
Provision for income taxes	–	–	–	–
Net loss	(13,943)	(18,759)	(5,717)	(7,862)
Net loss attributable to noncontrolling interests	–	37	–	–
Net loss attributable to Vaccinex, Inc.	(13,943)	(18,722)	(5,717)	(7,862)
Cumulative dividends on redeemable convertible preferred stock	(3,211)	(3,211)	(792)	(792)
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)	$ (6,509)	$ (8,654)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (25.27)	$ (19.90)	$ (5.91)	$ (7.85)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	1,038,141	1,101,937	1,100,914	1,102,571
Pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)		$ (1.72)		$ (0.89)
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)		7,939,522		8,141,726

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	1,038,796	$ –	$ 51,527	(163)	(836)	$ (11)	$ (145,505)	$ (86,305)	$ –	$ (86,305)
Stock-based compensation	–	–	–	–	–	–	135	–	–	–	–	135	–	135
Conversion of February 2016 Note to common stock	–	–	–	–	62,563	–	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	1,101,359	–	53,789	(163)	(836)	(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	–	–	–	–	2,037	–	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	1,103,396	–	54,123	(163)	(836)	(11)	(187,249)	(125,453)	11,963	(113,490)
Capital contribution (unaudited)	–	–	–	–	–	–	–	–	–	–	–	–	8,000	8,000
Stock-based compensation (unaudited)	–	–	–	–	–	–	36	–	–	–	–	36	–	36
Net loss (unaudited)	–	–	–	–	–	–	–	–	–	–	(7,862)	(7,862)	–	(7,862)
Balance as of March 31, 2018 (unaudited)	53,089,959	$ 111,718	5,702,450	$ 7,684	1,103,396	$ –	$ 54,159	(163)	(836)	$ (11)	$ (195,111)	$ (133,279)	$ 19,963	$ (113,316)

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,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
CASH FLOWS FROM OPERATING ACTIVITIES:				
Net loss	$(13,943)	$(18,759)	$ (5,717)	$ (7,862)
Adjustments to reconcile net loss to net cash used in operating activities:				
Depreciation	178	206	48	56
Amortization of debt discount	1,566	1,217	242	235
Stock-based compensation	135	319	32	36
Change in fair value of derivative liabilities	(9,310)	(3,743)	520	(308)
Loss on extinguishment of related party convertible promissory note	–	–	–	2,180
Changes in operating assets and liabilities:				
Accounts receivable	(85)	(13)	95	37
Prepaid expenses and other current assets	276	(330)	(185)	(65)
Accounts payable	407	(555)	254	348
Accrued expenses	1,056	(27)	77	309
Deferred revenue	–	298	–	(131)
Net cash used in operating activities	(19,720)	(21,387)	(4,634)	(5,165)
CASH FLOWS FROM INVESTING ACTIVITIES:				
Purchase of property and equipment	(793)	(68)	–	(47)
Net cash used in investing activities	(793)	(68)	–	(47)
CASH FLOWS FROM FINANCING ACTIVITIES:				
Proceeds from issuance of convertible promissory notes to related parties, net of issuance cost	4,500	9,977	3,976	–
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	3	–
Repayment of convertible promissory note, related party	(800)	(6,000)	–	(4,000)
Proceeds from capital contribution	–	12,000	–	8,000
Payment of deferred offering costs	–	–	–	(44)
Net cash provided by financing activities	16,357	23,974	3,979	3,956
NET (DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS	(4,156)	2,519	(655)	(1,256)
CASH AND CASH EQUIVALENTS–Beginning of period	5,817	1,661	1,661	4,180
CASH AND CASH EQUIVALENTS–End of period	$ 1,661	$ 4,180	$ 1,006	$ 2,924
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	$ –	$ –	$ –
Deferred offering costs in accounts payable and accrued expenses	$ –	$ –	$ –	$ 573
Deferred offering reclassed from prepaid expenses and other current assets	$ –	$ –	$ –	$ 38

The accompanying notes are an integral part of these consolidated financial statements.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

1. COMPANY AND NATURE OF BUSINESS

Vaccinex, Inc. (together with its 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 its 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 early-stage biotechnology companies 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, $21.4 million, $4.6 million and $5.2 million for the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018, respectively, an accumulated deficit of $168.5 million, $187.2 million and $195.1 million and stockholders' deficit of $107.1 million, $113.5 million and $113.3 million as of December 31, 2016 and 2017 and March 31, 2018, respectively. The Company's ability to continue as a going concern is at 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 and the three months ended March 31, 2018, 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 and $8.0 million in capital contributions from noncontrolling interests during the year ended December 31, 2017 and the three months ended March 31, 2018, respectively. 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 16, the Company received $2.0 million of additional funding to the VX3 partnership in May 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.

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 March 31, 2018, and there were no gains or losses for Vaccinex Products for the years ended December 31, 2016 and 2017 and the three months ended March 31, 2018. During the year ended December 31, 2017, VX3 had a net loss attributable to noncontrolling interests of $37,000. There were no gains or losses for VX3 for the three months ended March 31, 2018. 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 (U.S. GAAP). The preparation of financial statements in conformity with U.S. 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 Balance Sheet and Stockholders' Deficit

The Company has presented unaudited pro forma balance sheet and stockholders' deficit as of March 31, 2018 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 described in Note 10; and (ii) the convertible promissory note and the related reclassification of the embedded derivative liability associated with the convertible promissory note upon the consummation of an IPO as further discussed in Note 7. Upon the

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

consummation of a qualified 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 7,039,155 shares of common stock. The unaudited pro forma stockholders' deficit does not give effect to any proceeds from the assumed IPO.

Unaudited Interim Consolidated Financial Information

The accompanying interim consolidated balance sheet as of March 31, 2018, the consolidated statements of operations and cash flows for the three months ended March 31, 2017 and 2018, the consolidated statement of redeemable convertible preferred stock and stockholders' deficit for the three months ended March 31, 2018, and the related footnote disclosures are unaudited. These unaudited interim consolidated financial statements have been prepared in accordance with U.S. GAAP. In management's opinion, the unaudited interim consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements as of and for the years ended December 31, 2016 and 2017 and include all normal and recurring adjustments necessary to state fairly our financial position as of March 31, 2018, the results of operations and cash flows for the three months ended March 31, 2017 and 2018, and the consolidated statement of redeemable convertible preferred stock and stockholders' deficit for the three months ended March 31, 2018. The results for the three months ended March 31, 2018 are not necessarily indicative of the operating results expected for the full calendar year or any future period.

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.

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.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

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 and the three months ended March 31, 2018.

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 7.

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 and the three months ended March 31, 2018.

VACCINEX, INC.

Notes to Consolidated Financial Statements

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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 service 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.

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, the Company may be required to accelerate, increase or decrease any remaining unrecognized stock-based compensation expense.

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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 for 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 targeted biotherapeutics to treat serious diseases and conditions with unmet medical needs, 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 and March 31, 2018, all long-lived assets are located in the United States.

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.

VACCINEX, INC.

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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 offering, 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 and the three months ended March 31, 2018, 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 repayment of all outstanding convertible promissory notes and accrued interest; and (iii) the related reclassification of the derivative liabilities associated with the convertible promissory notes into additional paid-in capital, as if all aforementioned repayment 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 Nos. 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 Nos. 2016-08, 2016-10 and 2016-12 are all effective beginning 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 lease liabilities 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. 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 using the retrospective transition method. The adoption of ASU No. 2016-15 did 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 using the prospective method, and the adoption of ASU No. 2017-09 did not 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.

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(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

3. BALANCE SHEET COMPONENTS

Property and Equipment

Property and equipment consist of the following (in thousands):

	As of December 31,		As of March 31,
	2016	2017	2018 (unaudited)
Leasehold improvements	$ 3,129	$ 3,140	$ 3,140
Research equipment	2,989	2,998	3,036
Furniture and fixtures	350	350	350
Computer equipment	157	214	214
Property and equipment, gross	6,625	6,702	6,740
Less: accumulated depreciation and amortization	(5,895)	(6,101)	(6,157)
Property and equipment, net	$ 730	$ 601	$ 583

Depreciation and amortization expense related to property and equipment was $178,000, $206,000, $48,000 and $56,000 for the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018.

Accrued Expenses

Accrued expenses consist of the following (in thousands):

	As of December 31,		As of March 31,
	2016	2017	2018 (unaudited)
Accrued clinical trial cost	$1,098	$ 891	$ 1,378
Accrued payroll and related benefits	310	311	242
Accrued consulting and legal	278	239	849
Accrued other	231	324	35
Accrued interest	67	192	224
Accrued expenses	$1,984	$1,957	$ 2,728

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. ASC 820 describes a fair value hierarchy

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based on the following three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value:

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 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. As of December 31, 2016 and 2017 and March 31, 2018, the Company had Level 1 financial instruments carried at fair value in the form of money market funds.

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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 liability	$ 369	$ –	$ –	$ 369
Total Financial Liabilities	$ 369	$ –	$ –	$ 369

	March 31, 2018			
	Fair Value	Level 1	Level 2	Level 3
		(unaudited)		
Financial Assets:				
Money market fund (included in cash and cash equivalents)	$ 1,561	$1,561	$ –	$ –
Total Financial Assets	$ 1,561	$1,561	$ –	$ –
Financial Liabilities:				
Derivative liability	$ 61	$ –	$ –	$ 61
Total Financial Liabilities	$ 61	$ –	$ –	$ 61

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 and the three months ended March 31, 2018.

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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
Change in fair value (unaudited)	(308)
Balance – March 31, 2018 (unaudited)	$ 61

Level 3 instruments consist of the Company's embedded derivative liabilities related to conversion features within the outstanding convertible promissory notes as of December 31, 2016 and 2017 and March 31, 2018, 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 7, 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 a gain (loss) of $9.3 million, $3.7 million, ($0.5 million) and $0.3 million from the remeasurement of the derivative liabilities associated with the convertible promissory notes for the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018, respectively, and presents such amounts in its consolidated statements of operations as changes in fair value of derivative liabilities.

5. LICENSE AND SERVICES 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.

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VX3 was created for the purpose of funding the Company's research and development activities for VX15. 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 and, in return, VX3 agreed to fund research and development activities with up to an aggregate of $32.0 million in milestone payments to the Company 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 in 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 an 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 $18.20 and (2) the then fair market value of VX3 divided by the then fair market value of one share of the Company's common stock.

The Company has a variable interest in VX3 through FCMI Parent, which is majority owned and controlled by the Company's chairman, and its control of 96% and 97% of VX3's voting interest as of December 31, 2017 and March 31, 2018, respectively. VX3 does not have any business operations or generate any income or expenses and is primarily a funding mechanism specifically for the benefit of the Company, as its only activities consist of the receipt of funding and the contribution of such funding to the Company. Therefore, the Company determined that it is the primary beneficiary of VX3 and that the operating results of VX3 should be incorporated into the Company's consolidated financial statements accordingly.

In February 2018, the Services Agreement was amended to allow VX3 to provide additional funding for future research and development activities to take place in the year ending December 31, 2018 and to repay an outstanding convertible note in the amount of $4.0 million (Note 7). No other terms of the Services Agreement were amended; therefore, the above assessment resulting in the Company being the primary beneficiary of the VX3 entity remained unchanged as of March 31, 2018.

For the year ended December 31, 2017 and the three months ended March 31, 2018, the Company recorded the gross proceeds of $12.0 million and $8.0 million, respectively, received from VX3 as a capital contributions from noncontrolling interests on the consolidated financial statements.

6. COLLABORATION AGREEMENTS

Merck Sharp & Dohme Corp.

In September 2017, the Company entered into a research agreement with Merck Sharp & Dohme Corp. (Merck) to test vaccinia strain Modified Vaccinia Ankara. Under the research agreement, the Company will design genetic sequence for all constructs listed in the agreement and conduct research in accordance with the research protocol and a mutually agreed scope of work outlined in the agreement. Merck will supply the Company sufficient samples of the antibodies to carry out the research, and will have sole ownership of all right,

title, interest and copy rights of the research results. Under the agreement, the Company will receive quarterly payments upon the execution of the agreement. The Company received quarterly service payments in the amount of $138,000 under the research agreement, of which $69,000 and $69,000 was recognized as service revenue for the year ended December 31, 2017 and three months ended March 31, 2018, respectively. Deferred revenue as of December 31, 2017 totaled $69,000. The research agreement will expire in June 2018.

Surface Oncology, Inc.

In November 2017, the Company entered into a research collaboration and license option agreement with Surface Oncology, Inc. (Surface) to identify and select antibodies against two target antigens, using the Company's proprietary technology as described in the agreement. The term for each research program is nine to twelve months (not exceeding twelve months unless extended by written agreement) including time necessary for any functional assessment conducted by Surface following the commencement of the research program. Surface will provide the Company material to carry out the research activities. During the research program term, the Company also grants Surface non-exclusive, worldwide, limited-purpose license for each target to use the Company's research program materials for conducting the research work pursuant to the agreement.

Under the agreement, Surface has been granted exclusive options, exercisable by providing a written notice to the Company, to obtain (i) an exclusive product license to make, use, sell and import products incorporating the antibody targeting the first antigen and (ii) an exclusive research tool license to use the antibody targeting the second antigen to perform research.

Under the agreement, Surface will pay an upfront technology access fee of $250,000 and milestone payments upon completion of each of four designated milestones for the first target antigen specified in the agreement. For the second target antigen, Surface will make payments to the Company based on time incurred by the Company in the conduct of the work plan described in the agreement. Surface will reimburse the Company for expenses incurred (i) in the conduct of the work plan as detailed in the research funding budget, and (ii) for patent filings and prosecution of the Company's program intellectual property as described in the agreement. The exercise of each option would also entail a license fee and annual maintenance fees, and in the case of the product license, royalties and additional milestone payments. During the year ended December 31, 2017, the Company received the upfront technology access fee of $250,000, of which $21,000 and $63,000 was recognized as revenue from the amortization of this upfront fee for the year ended December 31, 2017 and three months ended March 31, 2018, respectively. The remaining $229,000 and $166,000 was recognized as deferred revenue as of December 31, 2017 and March 31, 2018, respectively. This agreement will expire upon the expiration of both research programs and all evaluation and testing period.

7. CONVERTIBLE PROMISSORY NOTES

During the years ended December 31, 2016 and 2017, the Company 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 issued, in the aggregate, $3.0 million of convertible promissory notes to a related party (the March 2016 Notes).

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- In June 2016, the Company 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.

The following table sets forth a summary of the outstanding convertible promissory notes (in thousands):

	As of December 31,		As of March 31,
	2016	2017	2018 (unaudited)
June 2016 Note	$1,500	$ 1,500	$ 1,500
Unamortized debt discount	(463)	(316)	(272)
Net June 2016 Note	1,037	1,184	1,228
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	$ 1,228

February 2016 Note

The February 2016 Note accrued interest at an annual rate of 7% 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 62,563 shares of common stock at the price of $34.00 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 holder of these convertible promissory notes was 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 $18.20 per share as of December 31, 2016 and 2017 and March 31, 2018. 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.

January 2017 Notes

The $4.0 million of the January 2017 Notes issued in January 2017 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 holder of these convertible promissory notes was 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. As of March 31, 2018, the January 2017 Notes had been paid in full.

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) $18.20 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 $1.6 million, $1.2 million, $0.2 million and $0.2 million for the amortization of the debt discounts during the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018, respectively.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

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, $4.0 million issued in August and October 2017 was repaid along with accrued interest in November 2017 and $4.0 million issued in January 2017 was repaid in March 2018. The option arrangement associated with the January 2017 Notes was also waived upon the repayment of the January 2017 Notes. As a result of this repayment, the related $0.3 million derivative liabilities associated with the conversion feature and the option arrangement were written off and the $2.2 million unamortized debt discount was recognized as a loss on extinguishment of related party convertible promissory note in the consolidated statement of operations in the three months ended March 31, 2018.

As of December 31, 2016 and 2017 and March 31, 2018, 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	1,890
2020	4,000
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

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As of March 31, 2018, the Company's scheduled future payments on outstanding convertible promissory notes are as follows (in thousands):

Year Ending December 31,	(unaudited)
Remainder of 2018	$ –
2019	1,890
Total amount	1,890
Less: interest amount	(390)
Less: unamortized debt discount	(272)
Carrying value of convertible promissory notes (related party)	1,228
Less: current portion	–
Net of current portion (related party)	$ 1,228

8. 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 Lease

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 agreement requires 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 and March 31, 2018, the future minimum payments for the operating lease is $140,000 and $98,000, respectively.

Rent expense incurred under the operating lease was $168,000 for each of the years ended December 31, 2016 and 2017 and $42,000 for each of the three months ended March 31, 2017 and 2018, respectively.

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.

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Notes to Consolidated Financial Statements

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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 and March 31, 2018, the Company was not involved in any material legal proceedings.

9. COMMON STOCK RESERVED FOR ISSUANCE

Common stock has been reserved for the following potential future issuances:

	As of December 31,		As of March 31,
	2016	2017	2018
			(unaudited)
Conversion of outstanding preferred stock	6,599,600	7,039,155	7,039,155
Shares underlying outstanding stock options	405,658	420,956	438,496
Shares available for future stock option grants	36,369	19,034	1,494
Exchange of Vaccinex Products, LP units	1,202,566	1,202,566	1,202,566
Conversion of VX3 units (unaudited)	–	659,400	1,098,997
Total shares of common stock reserved	8,244,193	9,341,111	9,780,708

10. 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.

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 $31.00 to $25.30 per share, effective July 15, 2016, and again to $25.00 per share, effective May 31, 2017.

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Notes to Consolidated Financial Statements

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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 7, 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.

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(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

	March 31, 2018				
	Designated Shares Authorized	Shares Issued	Shares Outstanding	Aggregate Liquidation Preference	Net Carrying Value
			(unaudited)		
Series B	6,500,000	6,335,543	6,335,380	$ 27,787	$ 9,717
Series B-1	6,417,000	6,416,144	6,416,144	19,123	9,945
Series B-2	7,500,000	5,344,748	5,344,748	19,882	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	$ 141,866	$ 111,718

As of December 31, 2016 and 2017 and March 31, 2018, 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 declares a dividend payable upon outstanding shares of the Series D redeemable convertible preferred stock or (2) the board of directors declares 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.

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The Company has not recorded a liability for cumulative and unpaid dividends as of December 31, 2016 and 2017 and March 31, 2018, 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, $3.40 and $1.82 per share for Series A convertible preferred stock and Series B, B-1, C and D redeemable convertible preferred stock by the conversion price of $13.475, $13.1, $15.5, $18.2, $18.2 per share for Series A convertible preferred stock and Series B, B-1, C and D redeemable convertible preferred stock as of December 31, 2016 and 2017 and March 31, 2018. The conversion rate for Series B-2 redeemable convertible preferred stock is determined by dividing the original purchase price of $3.10 per share by the conversion price of $25.3 as of December 31, 2016 and $25.0 as of December 31, 2017 and March 31, 2018.

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.

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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.

11. STOCK-BASED COMPENSATION

Employee Equity Plans

In 2011, the Company adopted the 2011 Employee Equity Plan (the 2011 Plan) for the purpose of granting stock, stock option, and stock appreciation rights awards to employees, advisors and consultants. 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, advisors and consultants at 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, advisors and 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.

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A summary of the Company's stock option activity and related information is as follows:

		Options Outstanding			
	Shares Available for Grant	Shares Subject to Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Balance as of January 1, 2016	21,052	420,975	$ 8.70	9.0	$ –
Granted	(17,000)	17,000	13.60		
Exercised	–	–	–		
Canceled	32,317	(32,317)	7.85		
Balance as of December 31, 2016	36,369	405,658	9.01	8.1	1,978
Granted	(33,976)	33,976	13.60		
Exercised	–	(2,037)	7.10		
Canceled	16,641	(16,641)	14.60		
Balance as of December 31, 2017	19,034	420,956	9.20	7.4	5,021
Granted (unaudited)	(28,000)	28,000	13.60		
Canceled (unaudited)	10,460	(10,460)	7.10		
Balance as of March 31, 2018 (unaudited)	1,494	438,496	$ 9.50	7.3	$ 5,085
Exercisable as of December 31, 2017		374,986	$ 9.10	7.2	$ 4,502
Exercisable as of March 31, 2018 (unaudited)		383,734	$ 9.19	7.0	$ 4,569

The weighted-average grant date fair value of stock options granted to employees for the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018 was $8.93, $9.00, nil and $15.63 per share, respectively. The aggregate grant date fair value of stock options that vested during the years ended December 31, 2016 and 2017 and the three months ended March 31, 2017 and 2018 was $314,000, $300,000, nil and $79,000, respectively.

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 and March 31, 2018. 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 or the three months ended March 31, 2018. The intrinsic value of stock options exercised was $29,000 and $3,000 during the year ended December 31, 2017 and the three months ended March 31, 2017, respectively.

As of December 31, 2017 and March 31, 2018, total unrecognized compensation cost related to stock options granted to employees was $216,000 and $565,000, which is expected to be recognized over a weighted-average period of 1.9 and 3.5 years, respectively.

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Determination of Fair Value

The determination of the fair value of stock options on the date of grant using the Black-Scholes 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.

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.

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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,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
Expected term (in years)	6.0	6.0	–	6.0
Expected volatility	75.0%	75.0%	–	75.0%
Risk-free interest rate	1.4%	2.0%	–	2.6%
Expected dividend yield	–%	–%	–	–%

Total stock-based compensation expense recognized in the consolidated statements of operations is as follows (in thousands):

	Year Ended December 31,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
Research and development	$ 65	$ 54	$ 19	$ 21
General and administrative	70	265	13	15
Total stock-based compensation expense	$135	$319	$ 32	$ 36

12. INCOME TAXES

No provision for income taxes was recorded in the three months ended March 31, 2017 and 2018. The Company remains in a cumulative loss position with a full valuation allowance recorded against its net deferred income tax assets as of March 31, 2018.

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 U.S. tax 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.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

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	$ –	$ –

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

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.

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 (the 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. state jurisdictions. The tax years from January 1, 2014 to December 31, 2017 remain open to examination by the major jurisdictions in which the Company is subject to tax. Fiscal years outside the normal statute of limitations 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.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

13. NET LOSS AND PRO FORMA NET LOSS PER SHARE ATTRIBUTABLE TO COMMON STOCKHOLDERS

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,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
Net loss	$ (13,943)	$ (18,759)	$ (5,717)	$ (7,862)
Net loss attributable to noncontrolling interests	–	37	–	–
Net loss attributable to Vaccinex, Inc.	(13,943)	(18,722)	(5,717)	(7,862)
Cumulative dividends on preferred stock	(3,211)	(3,211)	(792)	(792)
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)	$ (6,509)	$ (8,654)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (25.27)	$ (19.90)	$ (5.91)	$ (7.85)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	1,038,141	1,101,937	1,100,914	1,102,571

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,		Three Months Ended March 31,	
	2016	2017	2017	2018
			(unaudited)	
Preferred stock (if converted)	4,675,640	6,837,585	6,599,600	7,039,155
Options to purchase common stock	418,365	408,373	405,284	424,843
Contingently issuable common stock upon exchange of Vaccinex Products, LP units	1,202,566	1,202,566	1,202,566	1,202,566
Contingently issuable common stock upon exchange of VX3 units (unaudited)	–	99,361	–	800,880

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

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 (unaudited)	Three Months Ended March 31, 2018 (unaudited)
Net loss attributable to Vaccinex, Inc. common stockholders	$ (21,933)	$ (8,654)
Adjustment to interest expense assuming conversion of convertible promissory notes, net of tax	141	32
Adjustment to cumulative dividends assuming conversion of preferred stock	3,211	792
Adjustment to interest expense related to the amortization of debt discount assuming conversion of convertible promissory notes	1,217	235
Adjustment to change in fair value of derivative liabilities assuming conversion of convertible promissory notes	3,743	308
Pro forma net loss attributable to Vaccinex, Inc. common stockholders, basic and diluted (unaudited)	$ (13,621)	$ (7,287)
Weighted-average shares used in computing net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted	1,101,937	1,102,571
Pro forma adjustment to reflect assumed conversion of convertible preferred stock	6,837,585	7,039,155
Weighted-average shares used in computing pro forma net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted (unaudited)	7,939,522	8,141,726
Pro forma net loss per share attributable to Vaccinex Inc. common stockholders, basic and diluted (unaudited)	$ (1.72)	$ (0.89)

14. 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 and March 31, 2018, the Company has not elected to match employee contributions as permitted by the plan. The Company pays the administrative costs for the plan.

15. RELATED PARTY TRANSACTIONS

As discussed in Note 8, 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 and $42,000 for each of the three months ended March 31, 2017 and 2018.

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 majority owned and controlled by the Company's chairman.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

Vaccinex LLC is majority 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, which was fully repaid as of March 31, 2018. 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, $192,000 and $138,000 as of and for the year ended December 31, 2017, $97,000 and $30,000 as of and for the three months ended March 31, 2017, and $224,000 and $32,000 as of and for the three months ended March 31, 2018. The aggregate balance of $1.0 million, $2.8 million and $1.2 million in convertible promissory notes to related parties was outstanding as of December 31, 2016 and 2017 and March 31, 2018. See Note 7 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 10 for more information.

16. SUBSEQUENT EVENTS

Annual

The Company amended the VX3 Partnership Agreement and Services 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.

Interim

The Company amended the VX3 Partnership Agreement and Services Agreement in May 2018. Under this amendment, noncontrolling investors in VX3 agreed to make an additional capital contribution of $2.0 million to the VX3 partnership. The funds will be used to sponsor certain Company research and development activities during 2018. In May 2018, the Company received the $2.0 million capital contribution from VX3 noncontrolling interests.

On August 7, 2018, the Company effected a 1-for-10 reverse stock split of the Company's issued and outstanding shares of common stock. The convertible preferred stock conversion price was increased by the ratio of the common stock outstanding immediately prior to split divided by immediately outstanding post to split. The par value of the common and convertible preferred stock was not adjusted as a result of the reverse stock split.

VACCINEX, INC.

Notes to Consolidated Financial Statements

(Information as of March 31, 2018 and for the Three Months Ended March 31, 2017 and 2018 is Unaudited)

All issued and outstanding share and per share amounts included in the accompanying consolidated financial statements have been adjusted to reflect this reverse stock split for all periods presented.

The Company has evaluated subsequent events through June 8, 2018, the date on which the March 31, 2018 consolidated financial statements were originally issued, and August 7, 2018 as to the effects of the reverse stock split.

3,333,334 Shares

Common Stock

PROSPECTUS

August 9, 2018

Oppenheimer & Co. **BTIG**

Ladenburg Thalmann

Until and including September 3, 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.