UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-38624

Vaccinex, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**16-1603202**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
1895 Mount Hope Avenue	
Rochester, New York	**14620**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (585) 271-2700

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value	VCNX	Nasdaq Capital Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of August 13, 2020, the registrant had 20,017,248, shares of common stock, $0.0001 par value per share, outstanding.

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PART I - FINANCIAL INFORMATION

Item 1. Financial Statements

VACCINEX, INC.

Condensed Consolidated Balance Sheets (Unaudited)
(in thousands, except share and per share data)

	As of June 30, 2020	As of December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 526	$ 2,776
Accounts receivable	221	898
Prepaid expenses and other current assets	1,827	336
Total current assets	2,574	4,010
Property and equipment, net	525	594
TOTAL ASSETS	$ 3,099	$ 4,604
LIABILITIES AND STOCKHOLDERS' DEFICIT		
Current liabilities:		
Accounts payable	5,370	3,208
Accrued expenses	2,173	3,670
Total current liabilities	7,543	6,878
Long-term debt	1,134	-
TOTAL LIABILITIES	8,677	6,878
Commitments and contingencies (Note 7)		
Stockholders' deficit:		
Common stock, par value of $0.0001 per share; 100,000,000 shares authorized as of June 30, 2020, and December 31, 2019; 17,023,824 and 14,887,999 shares issued as of June 30, 2020 and December 31, 2019, respectively; 17,022,972 and 14,887,147 shares outstanding as of June 30, 2020 and December 31, 2019, respectively	2	1
Additional paid-in capital	232,748	222,403
Treasury stock, at cost; 852 shares of common stock as of June 30, 2020 and December 31, 2019, respectively	(11)	(11)
Accumulated deficit	(262,280)	(248,630)
Total Vaccinex, Inc. stockholders' deficit	(29,541)	(26,237)
Noncontrolling interests	23,963	23,963
TOTAL STOCKHOLDERS' DEFICIT	(5,578)	(2,274)
TOTAL LIABILITIES AND STOCKHOLDERS' DEFICIT	$ 3,099	$ 4,604

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

VACCINEX, INC.

Condensed Consolidated Statements of Operations and Comprehensive Loss (Unaudited)
(in thousands, except share and per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Revenue	$ -	$ 25	$ -	$ 119
Costs and expenses:				
Cost of revenue	-	16	-	191
Research and development	4,557	7,304	9,966	14,716
General and administrative	1,943	1,563	3,693	3,210
Total costs and expenses	6,500	8,883	13,659	18,117
Loss from operations	(6,500)	(8,858)	(13,659)	(17,998)
Other income (expense), net	(1)	30	9	103
Loss before provision for income taxes	(6,501)	(8,828)	(13,650)	(17,895)
Provision for income taxes	-	-	-	-
Net loss	(6,501)	(8,828)	(13,650)	(17,895)
Net loss attributable to noncontrolling interests	-	-	-	-
Net loss attributable to Vaccinex, Inc. common stockholders	$ (6,501)	$ (8,828)	$ (13,650)	$ (17,895)
Comprehensive loss	$ (6,501)	$ (8,828)	$ (13,650)	$ (17,895)
Net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	$ (0.39)	$ (0.77)	$ (0.84)	$ (1.56)
Weighted-average shares used in computing net loss per share attributable to Vaccinex, Inc. common stockholders, basic and diluted	16,689,399	11,479,294	16,345,211	11,477,521

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

VACCINEX, INC.

Condensed Consolidated Statements of Stockholders' Equity (Deficit) (Unaudited)
(in thousands, except share data)

	Common Stock			Treasury Stock					
	Shares	Amount	Additional Paid-in Capital	Common Stock Shares	Amount	Accumulated Deficit	Total Vaccinex, Inc. Stockholders' Deficit	Noncontrolling Interests	Total Stockholders' Equity (Deficit)
Balance as of January 1, 2019	11,476,601	$ 1	$ 208,156	852	$ (11)	$ (216,767)	$ (8,621)	$ 23,963	$ 15,342
Stock-based compensation	-	-	60	-	-	-	60	-	60
Net loss	-	-	-	-	-	(9,067)	(9,067)	-	(9,067)
Balance as of March 31, 2019	11,476,601	1	208,216	852	(11)	(225,834)	(17,628)	23,963	6,335
Exchange of Vaccinex Products LP Units for common shares	4,455	-	-	-	-	-	-	-	-
Stock-based compensation	-	-	113	-	-	-	113	-	113
Net loss	-	-	-	-	-	(8,828)	(8,828)	-	(8,828)
Balance as of June 30, 2019	11,481,056	$ 1	$ 208,329	852	$ (11)	$ (234,662)	$ (26,343)	$ 23,963	$ (2,380)

	Common Stock			Treasury Stock					
	Shares	Amount	Additional Paid-in Capital	Common Stock Shares	Amount	Accumulated Deficit	Total Vaccinex, Inc. Stockholders' Deficit	Noncontrolling Interests	Total Stockholders' Equity (Deficit)
Balance as of January 1, 2020	14,887,999	$ 1	$ 222,403	852	$ (11)	$ (248,630)	$ (26,237)	$ 23,963	$ (2,274)
Issuance of common shares	1,468,563	1	7,475	-	-	-	7,476	-	7,476
Stock-based compensation	20,000	-	204	-	-	-	204	-	204
Exercise of stock options	1,025	-	4	-	-	-	4	-	4
Net loss	-	-	-	-	-	(7,149)	(7,149)	-	(7,149)
Balance as of March 31, 2020	16,377,587	2	230,086	852	(11)	(255,779)	(25,702)	23,963	(1,739)
Issuance of common shares	642,112	-	2,296	-	-	-	2,296	-	2,296
Exchange of Vaccinex Products LP Units for common shares	4,125	-	-	-	-	-	-	-	-
Stock-based compensation	-	-	366	-	-	-	366	-	366
Net loss	-	-	-	-	-	(6,501)	(6,501)	-	(6,501)
Balance as of June 30, 2020	17,023,824	$ 2	$ 232,748	852	$ (11)	$ (262,280)	$ (29,541)	$ 23,963	$ (5,578)

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

VACCINEX, INC.

Condensed Consolidated Statements of Cash Flows (Unaudited)
(in thousands)

	Six Months Ended June 30,	
	2020	**2019**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (13,650)	$ (17,895)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	162	117
Net amortization of premiums and discounts on marketable securities	-	(45)
Stock-based compensation	570	173
Changes in operating assets and liabilities:		
Accounts receivable	677	(232)
Prepaid expenses and other current assets	(1,275)	645
Accounts payable	2,055	3,126
Accrued expenses	(1,497)	(311)
Net cash used in operating activities	(12,958)	(14,422)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Sales of marketable securities	-	14,150
Purchase of property and equipment	(254)	(67)
Net cash (used in) provided by investing activities	(254)	14,083
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from private offering of common stock	7,475	-
Proceeds from issuance of common stock	2,349	-
Proceeds from long-term debt	1,134	-
Proceeds from exercise of stock options	4	-
Net cash provided by financing activities	10,962	-
NET (DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS	(2,250)	(339)
CASH AND CASH EQUIVALENTS–Beginning of period	2,776	5,618
CASH AND CASH EQUIVALENTS–End of period	$ 526	$ 5,279
SUPPLEMENTAL DISCLOSURES OF NONCASH INVESTING AND FINANCING ACTIVITIES:		
Purchase of property and equipment in accounts payable	$ (161)	$ -
Amortization of deferred offering costs in prepaid assets	$ (54)	$ -
Deferred offering costs in prepaid assets and accounts payable	$ 269	$ -

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

Note 1. COMPANY AND NATURE OF BUSINESS

Vaccinex, Inc. (together with its subsidiary, 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, manufacturing and clinical development and raising capital.

The Company is subject to a number of risks and uncertainties common to other early-stage biotechnology companies including, but not limited to, dependency on 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, compliance with governmental regulations, technological and medical risks, management of growth and effectiveness of marketing by the Company. The Company is also subject to risks related to the ongoing COVID-19 pandemic, discussed under "COVID-19 Pandemic" below. 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.

Going Concern

These unaudited condensed 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 $13.0 million and $14.4 million for the six months ended June 30, 2020 and 2019, respectively, and an accumulated deficit of $262.3 million and $248.6 million as of June 30, 2020 and December 31, 2019, respectively. The Company anticipates that cash and cash equivalents at June 30, 2020 would be insufficient to fund our planned operations for the quarter ending September 30, 2020. These conditions raise substantial doubt about the Company's ability to continue as a going concern for a period of 12 months from the date of these financial statements. The unaudited condensed 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 public and private sales of equity and debt financing to fund its operations, in addition to capital contributions from noncontrolling interests and a limited amount of service revenue from collaboration agreements. The Company completed private placements of its common stock for aggregate gross proceeds of $7.5 million and $13.8 million in January 2020 and July 2019, respectively. In March 2020, the Company announced that it had (i) entered into an Open Market Sale Agreement with Jefferies LLC ("Jefferies") and filed a related prospectus supplement pursuant to which the Company may issue and sell up to $11.5 million of shares of its common stock from time to time through Jefferies as sales agent and (ii) entered into a Purchase Agreement with Keystone Capital Partners, LLC ("Keystone") pursuant to which Keystone has agreed to purchase up to an aggregate of $5.0 million of shares of the Company's common stock at the Company's direction from time to time. During the second quarter of 2020, 317,688 shares were sold through the Open Market Sale Agreement for proceeds of $1.2 million, net of commission, and 324,424 shares were sold through the Purchase Agreement with Keystone for proceeds of $1.1 million, net of discount. In addition, on May 8, 2020, the Company received a loan of $1.1 million from Five Star Bank (the "PPP Loan") under the Paycheck Protection Program established as a part of the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"). However, the Company will need substantial additional capital to continue to support its ongoing operations. Financing strategies may include, but are not limited to, the public or private sale of equity, debt financings or funds from other capital sources, such as government funding, collaborations, strategic alliances, or licensing arrangements with third parties. There can be

no assurances that the Company will be able to secure additional financing, including by its agreements with Jefferies or Keystone. There can also be no assurances that if financing is available, it will be sufficient to meet its needs or on favorable terms. As a result, taking into account the current economic uncertainty associated with COVID-19, the Company has concluded that management's plans do not alleviate substantial doubt about the Company's ability to continue as a going concern.

COVID-19 Pandemic

In order to mitigate the spread of COVID-19, governments have imposed unprecedented restrictions on business operations, travel, and gatherings, resulting in a global economic downturn and other adverse economic and societal impacts. As a result of the COVID-19 pandemic, most Company employees worked remotely throughout the quarter ended June 30, 2020. The Company has complied with state reopening guidance has allowed research and development staff to begin working in the laboratory when necessary and using recommended health and safety precautions. The COVID-19 pandemic has impacted the expected timing of the Company's clinical trials, the economy, the biotechnology industry, and the Company's business. For example, the Company previously anticipated initiating a trial of pepinemab in Alzheimer's disease in mid-2020, but the initial enrollment date is now delayed until September 2020. In addition, to mitigate the impacts of the COVID-19 pandemic, including impacts on the Company's ability to raise capital and to maintain its personnel, the Company applied for and received the PPP Loan. The Company may experience further disruptions as a result of the COVID-19 pandemic that could adversely impact its business, including disruption of research and clinical development activities, plans for release of data, manufacturing, supply, and interactions with regulators and other third parties, and difficulties in raising additional capital. The extent to which the COVID-19 pandemic may impact the Company's business will depend on future developments, which are highly uncertain and cannot be predicted with confidence.

Note 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Consolidation

These condensed consolidated financial statements reflect the accounts and operations of the Company and those of its subsidiary in which the Company has a controlling financial interest and a variable interest entity ("VIE") in which the Company is the primary beneficiary. As of June 30, 2020, and 2019, the Company's accounts include Vaccinex Products, LP, a Delaware limited partnership ("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 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' equity (deficit). The company presents the net loss of VX3 equal to the percentage ownership interest retained in such entity by the respective noncontrolling party (VX3), and as a separate component within its consolidated statements of operations and comprehensive loss. The financial position of Vaccinex Products was not material as of June 30, 2020 and 2019, and there were no gains or losses for Vaccinex Products for the six months ended June 30, 2020 and 2019. All intercompany transactions and balances have been eliminated.

These condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and following the requirements of the Securities and Exchange Commission (the "SEC"), for interim reporting. As permitted under those rules, certain footnotes or other financial information that are normally required by U.S. GAAP can be condensed or omitted. These condensed consolidated financial statements have been prepared on the same basis as the Company's annual consolidated financial statements and, in the opinion of management, reflect all adjustments, consisting only of normal recurring adjustments that are necessary for a fair statement of the Company's financial information. The results of operations for the interim periods presented are not necessarily indicative of the results to be expected for any subsequent quarter or for the entire year ending December 31, 2020. The year-end balance sheet data was derived from audited consolidated financial statements but does not include all disclosures required by U.S. GAAP. Certain information and note disclosures normally included in annual consolidated financial statements prepared in accordance with U.S. GAAP have been omitted under the rules and regulations of the SEC.

These condensed consolidated financial statements should be read in conjunction with the Company's audited consolidated financial statements and related notes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on March 9, 2020.

Use of Estimates

These condensed consolidated financial statements have been prepared in conformity with 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 condensed 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, and valuation allowances against deferred income tax assets. Actual results could differ from those estimates.

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 its 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.

Deferred Offering Costs

The Company has incurred certain costs in connection with its ongoing securities offerings with Jefferies and Keystone. The Company capitalizes such deferred offering costs, which consist of direct, incremental legal, professional, accounting, and other third-party fees. The deferred offering costs will be offset against offering proceeds upon the completion of an offering. Should the offering be abandoned, the deferred offering costs will be expensed immediately as a charge to operating expenses in the Condensed Consolidated Statement of Operations and Comprehensive Loss. At June 30, 2020, deferred offering costs were $0.3 million, and were included within Prepaid expenses and other assets on the Condensed Consolidated Balance Sheets.

Recent Accounting Pronouncements Not Yet Adopted

In February 2016, the Financial Accounting Standards Board (the "FASB") issued Accounting Standards Update No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), in order to improve comparability among organizations by recognizing lease assets and liabilities in the consolidated balance sheets for those leases previously classified as operating leases under U.S. GAAP. The update requires a lessee to recognize in its consolidated balance sheet a liability to make lease payments and also a right-of-use asset representing its right to use the underlying asset for the lease term. ASU 2016-02 is effective for the Company for annual periods beginning after December 15, 2020 and interim periods within fiscal years beginning after December 15, 2021, requiring the use of a modified retrospective transition approach applied at the beginning of the earliest comparative period presented in the financial statements. In July 2018, the FASB issued ASU No. 2018-11, *Leases, Targeted Improvements to ASC 842, Leases*, ("ASU 2018-11"), which contains certain amendments to ASU 2016-02 intended to provide relief in implementing the new standard. ASU 2018-11 provides registrants with an option to not restate comparative periods presented in the financial statements. The Company intends to elect this new transition approach using a cumulative-effect adjustment on the effective date of the standard, for which comparative periods will be presented in accordance with the previous guidance in Accounting Standards Codification ("ASC") 840, *Leases*.

The Company is currently evaluating the potential impact ASU 2016-02 may have on its financial position, results of operations, and related footnotes. The Company expects it will elect to utilize the available package of practical expedients permitted under the transition guidance within the new standard, which does not require the reassessment of the following: (i) whether existing or expired arrangements are or contain a lease, (ii) the lease classification of existing or expired leases, and (iii) whether previous initial direct costs would qualify for capitalization under the new lease standard. Additionally, the Company expects it will make an accounting policy election to keep leases with an initial term of 12 months or less off of its balance sheet. The Company's assessment will include, but is not limited to, evaluating the impact that this standard has on the lease of its corporate headquarters in Rochester, New York.

In June 2016, the FASB issued ASU No. 2016-13, "Measurement of Credit Losses on Financial Instruments" to improve reporting requirements specific to loans, receivables, and other financial instruments. The new standard requires that credit losses on financial assets measured at amortized cost be determined using an expected loss model, instead of the current incurred loss model, and requires that credit losses related to available-for-sale debt securities be recorded through an allowance for credit losses and limited to the amount by which carrying value exceeds fair value. The new standard also requires enhanced disclosure of credit risk associated with financial assets. The standard is effective for interim and annual periods beginning after December 15, 2022 with early adoption permitted. Based on the composition of the Company's financial assets, current market conditions and historical credit loss activity, the adoption of this standard is not expected to have a material impact on the Company's condensed consolidated financial statements.

Note 3. BALANCE SHEET COMPONENTS

Property and Equipment

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

	As of June 30, 2020	As of December 31, 2019
Leasehold improvements	$ 3,161	$ 3,161
Research equipment	3,476	3,442
Furniture and fixtures	350	350
Computer equipment	273	214
Property and equipment, gross	7,260	7,167
Less: accumulated depreciation and amortization	(6,735)	(6,573)
Property and equipment, net	$ 525	$ 594

Depreciation expense related to property and equipment was $87,000 and $57,000 for the three months ended June 30, 2020 and 2019, respectively and $162,000 and $117,000 for the six months ended June 30, 2020 and 2019, respectively.

Accrued Expenses

Accrued expenses consist of the following (in thousands):

	As of June 30, 2020	As of December 31, 2019
Accrued clinical trial cost	$ 1,666	$ 3,252
Accrued payroll and related benefits	375	262
Accrued consulting and legal	109	79
Accrued other	23	77
Accrued expenses	$ 2,173	$ 3,670

Note 4. FAIR VALUE MEASUREMENTS OF FINANCIAL MEASUREMENTS

Assets and liabilities recorded at fair value on a recurring basis in the condensed consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair values. Financial instruments consist of cash and cash equivalents, accounts receivable, accounts payable, accrued liabilities, and long-term debt. Cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities, and debt, are stated at their carrying value, which approximates fair value due to the short time to the expected receipt or payment date of such amounts. 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 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.

The following table sets forth the fair value of the Company's financial assets by level within the fair value hierarchy (in thousands):

	As of June 30, 2020			
	Fair Value	Level 1	Level 2	Level 3
Financial Assets:				
Cash equivalents:				
Money market fund	$ 1	$ 1	$ -	$ -
Total Financial Assets	$ 1	$ 1	$ -	$ -

	As of December 31, 2019			
	Fair Value	Level 1	Level 2	Level 3
Financial Assets:				
Cash equivalents:				
Money market fund	$ 1,464	$ 1,464	$ -	$ -
Total Financial Assets	$ 1,464	$ 1,464	$ -	$ -

The Company did not transfer any assets measured at fair value on a recurring basis to or from Level 1 and Level 2 during either of the six months ended June 30, 2020 and 2019.

The fair value of the long-term debt is estimated to be $1,133,600 as of June 30, 2020. The use of various unobservable inputs in the determination of fair value constitutes a Level 3 categorization for fair value determination.

Note 5. LICENSE AND SERVICES AGREEMENT

In November 2017, the Company entered into a license agreement (the "VX3 License Agreement") with VX3, which was formed by a group of Canadian investors including the Company's majority stockholder, FCMI Parent Co. ("FCMI Parent"). VX3 was created for the purpose of funding the Company's research and development activities for pepinemab, the Company's most advanced product candidate. Under the VX3 License Agreement, the Company granted VX3 the license to use, make, have made, sell, offer and import pepinemab 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 pepinemab 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 pepinemab for the treatment of Huntington's disease in the U.S. and Canada in exchange for services payments from VX3. 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, 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 its partners 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 which controlled 90% of VX3's voting interest as of June 30, 2020. 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.

The Company entered into an exchange agreement on August 13, 2018 with VX3 and its partners, including FCMI Parent, that provides each VX3 partner with the right to exchange all, but not less than all, of its partnership interests in VX3 for shares of the Company's common stock. The exchange agreement also provides that FCMI Parent's exercise of its option to exchange its VX3 partnership interests for shares of Company common stock would trigger the exchange of all VX3 partnership interests for shares of Company common stock. Further, under the exchange agreement, the Company will have a right to require the exchange of all partnership interests in VX3 for shares of Company common stock in any of the following circumstances:

- the Company enters into a transaction such as a sale, merger or consolidation such that shares of Company common stock are or will be sold or exchanged for cash and/or marketable securities;
- on or after August 13, 2023; or
- either the Company or VX3 enters into a licensing, partnering or similar transaction with respect to one or more products and indications licensed to VX3 by the Company, and all amounts then due and owing to VX3 in connection with such transaction have been paid to VX3.

For the three and six months ended June 30, 2020 and 2019, the Company did not receive any amounts from VX3 or record any related capital contributions from noncontrolling interests on the condensed financial statements. Noncontrolling equity interests do not participate in a proportionate share of the Company's net losses for the three or six months ended June 30, 2020 or 2019 pursuant to the aforementioned partnership, license, services and exchange agreements.

Note 6. COLLABORATION AGREEMENTS

Merck Sharp & Dohme Corp.

In the fourth quarter of 2018, the Company entered into a research agreement with Merck Sharp & Dohme Corp. to test vaccinia strain Modified Vaccinia Ankara in an antibody discovery campaign. This research agreement entailed a cost sharing feasibility study, which concluded during the second quarter of 2019.

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. The Company received service fee payments of $25,000 for work conducted under the agreement for the three months ended June 30, 2019 and $118,877 for the six months ended June 30, 2019 and no service fee payments for work conducted under the agreement for the three and six months ended June 30, 2020. This agreement will expire upon the latest of the expiration of both research programs and all evaluation and testing periods.

Under the agreement, Surface may purchase 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 antibodies targeting the first antigen and (ii) an exclusive research tool license to use antibodies targeting the second antigen to perform research. Surface purchased the first option and exercised the second option and the Company entered into an exclusive research tool license agreement with Surface in the third quarter of 2019.

Note 7. COMMITMENTS AND CONTINGENCIES

Sublicense Termination Payments

In 2006, the Company licensed certain technology to EUSA Pharma SAS ("EUSA"), and in 2008, this technology was sublicensed by EUSA to Glaxo Group Limited ("GSK") for development. GSK terminated its sub-license with EUSA in March 2010 and ownership of the technology reverted back to the Company. The Company may be required to pay EUSA up to $25.5 million plus ongoing royalty payments of 1% of net sales upon the occurrence of certain events involving the previously licensed technology, including a Phase 3 clinical trial, Food and Drug Administration 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. Following entry into a lease extension agreement in July 2018, the lease agreement requires monthly rental payments of $14,000 through October 31, 2020. The Company is responsible for all maintenance, utilities, insurance and taxes related to the facility.

As of June 30, 2020, the future minimum payments for the operating leases total $56,000 in 2020 and $0 for years 2021 through 2024.

Rent expense incurred under the operating lease was $42,000 and $84,000 for the three and six months ended June 30, 2020 and 2019, 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.

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 June 30, 2020, and December 31, 2019, the Company was not involved in any material legal proceedings.

Note 8. LONG-TERM DEBT

On May 8, 2020, the Company received the PPP Loan in the amount of $1,133,600. The PPP Loan matures on May 8, 2022, with no principal payments required prior to the maturity date, and bears interest at an annual rate of 1.0%, with interest payments commencing on November 8, 2020, less the amount of any potential forgiveness. The PPP Loan may be repaid at any time prior to maturity without incurring prepayment penalties. Pursuant to the CARES Act, all or a portion of the PPP Loan may be forgiven if the PPP Loan is used for qualifying expenses as described in the CARES Act, subject to certain conditions. The Company intends to seek forgiveness for this loan, but until such forgiveness is granted the loan has been recorded as long-term debt and related interest has been accrued accordingly. As of June 30, 2020, the Company has reflected accrued interest and interest expense of $1,667 within its condensed consolidated balance sheet and condensed statement of operations and comprehensive loss, respectively.

Note 9. COMMON STOCK RESERVED FOR ISSUANCE

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

	As of June 30, 2020	As of December 31, 2019
Shares underlying outstanding stock options	836,880	579,731
Shares available for future stock option grants	266,021	230,952
Exchange of Vaccinex Products, LP units	1,169,375	1,173,500
Conversion of VX3 units	1,318,797	1,318,797
Total shares of common stock reserved	3,591,073	3,302,980

During the six months ended June 30, 2020 and 2019, 4,125 and 4,455 units, respectively, of Vaccinex Products, LP were exchanged for shares of the Company's common stock at par value of $0.0001 per share.

Note 10. STOCK-BASED COMPENSATION

2011 Employee Equity Plan

In connection with the adoption of the Company's 2018 Omnibus Incentive Plan (the "2018 Plan") in August 2018, the Company ceased granting stock options under the Company's 2011 Employee Equity Plan (the "2011 Plan"). However, the 2011 Plan will continue to govern the terms and conditions of the outstanding stock options previously granted thereunder. Stock options granted under the 2011 Plan expire in five or ten years from the date of grant.

2018 Omnibus Incentive Plan

In August 2018, the Company's board of directors adopted, and its stockholders approved, the 2018 Plan, which allows for the granting of stock, stock options, and stock appreciation rights awards to employees, advisors and consultants. Stock options granted under the 2018 Plan may be either incentive stock options or non-statutory 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. Non-statutory 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 non-statutory 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. The vesting period of stock option grants is determined by the board of directors, ranging from zero to eight years. Stock options granted under the 2018 Plan expire in five or ten years from the date of grant.

The Company initially reserved 425,000 shares of common stock for issuance, subject to certain adjustments, pursuant to awards under the 2018 Plan. Any shares of common stock related to awards outstanding under the 2011 Plan as of the effective date of the 2018 Plan, which thereafter terminate by expiration, forfeiture, cancellation or otherwise without the issuance of such shares, will be added to, and included in, the number of shares of common stock available for grant under the 2018 Plan. 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 the Company's common stock as of December 31st of the immediately preceding year or such lesser number as the Company's board of directors may decide, which may be zero. Accordingly, on January 1, 2020, 297,743 additional shares of common stock became available for issuance under the 2018 Plan.

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

	Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (000's)
Balance as of December 31, 2019	579,731	$ 8.04	7.0	$ 120
Granted	266,674	4.36		
Exercised	(1,025)	4.43		$ 1
Canceled	(8,500)	8.10		
Balance as of June 30, 2020	836,880	$ 6.87	7.4	$ -
Exercisable as of June 30, 2020	563,731	$ 7.82	6.7	$ -

The weighted-average grant date fair value of stock options granted to employees and directors for the six months ended June 30, 2020 and 2019 was $3.52 per share and $3.31 per share, respectively. The aggregate grant date fair value of stock options that vested during the six months ended June 30, 2020 and 2019 was $705,805 and $78,156, respectively.

The intrinsic value of stock options vested and exercisable and expected to vest and become exercisable is calculated based on the difference between the exercise price and the fair value of the Company's common stock as of June 30, 2020 and December 31, 2019. 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.

As of June 30, 2020 and December 31, 2019, total unrecognized compensation cost related to stock options granted to employees was $826,240 and $627,129, respectively, which is expected to be recognized over a weighted-average period of 2.95 and 2.39 years, respectively.

The grant date fair value of employee stock options was estimated using a Black-Scholes option-pricing model with the following weighted-average assumptions:

	Six Months Ended June 30,	
	2020	2019
Expected term (in years)	6.4	6.0
Expected volatility	75%	75%
Risk-free interest rate	1.0%	2.5%
Expected dividend yield	-%	-%

In March 2020, the Company issued 20,000 shares of common stock as compensation for administrative fees incurred in connection with entering into a purchase agreement with Keystone. Pursuant to the terms of the Purchase Agreement, Keystone has agreed to purchase up to $5,000,000 of shares of the Company's common stock. At the time of issuance, the fair market value of the shares was $4.00, and, as a result, $80,000 was included in general and administrative expenses for the six-months ended June 30, 2020.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Research and development	$ 38	$ 31	$ 59	$ 46
General and administrative	328	82	511	127
Total stock-based compensation expense	$ 366	$ 113	$ 570	$ 173

Note 11.INCOME TAXES

No provision for income taxes was recorded in either of the three months ended June 30, 2020 and 2019. The Company remains in a cumulative loss position with a full valuation allowance recorded against its net deferred income tax assets as of June 30, 2020.

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 June 30, 2020 and December 31, 2019, the Company had no unrecognized income tax benefits that would affect the Company's effective tax rate if recognized.

In response to the COVID-19 pandemic, federal, state and local governments have enacted or are contemplating enacting relief measures to provide aid and economic stimulus. These measures may include deferring the due dates of tax payments or other changes to their income and non-income-based tax laws. For the three and six months ended June 30, 2020, there were no material tax impacts to the Company's condensed consolidated financial statements as it relates to COVID-19 measures. The Company continues to monitor additional guidance issued by the U.S. Treasury Department, the Internal Revenue Service and other governmental bodies.

Note 12. NET LOSS PER SHARE ATTRIBUTABLE TO COMMON STOCKHOLDERS

The following weighted-average common stock equivalents were excluded from the calculation of diluted net loss per share for the periods presented as they had an anti-dilutive effect:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Options to purchase common stock	780,856	546,068	688,837	489,059
Contingently issuable common stock upon exchange of Vaccinex Products, LP units	1,170,010	1,199,021	1,171,755	1,200,794
Contingently issuable common stock upon exchange of VX3 units	1,318,797	1,318,797	1,318,797	1,318,797

Note 13. 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 reportable segment. As of June 30, 2020 and December 31, 2019, all long-lived assets are located in the United States.

Note 14. RELATED PARTY TRANSACTIONS

As discussed in Note 7, the Company 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 $42,000 and $84,000 for the three and six months ended June 30, 2020 and 2019.

As discussed in Note 6, in November 2017, the Company entered into a research collaboration and license option agreement with Surface to identify and select antibodies against two target antigens, using the Company's proprietary technology as described in the agreement. J. Jeffrey Goater, a member of the Company's 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. The Company received service fee payments of $25,000 for work conducted under the agreement for the three months ended June 30, 2019 and $118,877 for the six months ended June 30, 2019 and no service fee payments for work conducted under the agreement for the three and six months ended June 30, 2020. This agreement will expire upon the latest of the expiration of both research programs and all evaluation and testing periods.

On July 9, 2020, the Company entered into a stock purchase agreement (the "July 2020 Stock Purchase Agreement") with Friedberg Global-Macro Hedge Fund, Ltd. (the "Investor"), pursuant to which the Company issued and sold to the Investor 1,126,760 shares (the "Shares") of the Company's common stock, at a purchase price of $3.55 per Share (the "Private Placement"), for gross proceeds of $4.0 million. Albert D. Friedberg, the Company's chairman and beneficial owner of a majority of the Company's outstanding common stock, controls Friedberg Mercantile Group, the investment manager of the Investor, which exercises voting and dispositive power over shares held directly by the Investor. The closing of the Private Placement occurred on July 10, 2020. The Company intends to use the net proceeds from the Private Placement to fund the ongoing development of pepinemab, the Company's lead product candidate, and for working capital and general corporate purposes. Also, on July 10, 2020, the Company entered into a registration rights agreement (the "July 2020 Registration Rights Agreement") with the Investor that affords the Investor certain resale registration rights with respect to the Shares.

Note 15. SUBSEQUENT EVENTS

Subsequent to the end of the second quarter, the Company sold an additional 1,886,590 shares of the Company's common stock at a weighted average price of $3.80, through the Open Market Sale Agreement, for net proceeds of $6.9 million.

As discussed in Note 14, on July 9, 2020, the Company entered into the July 2020 Stock Purchase Agreement with the Investor, pursuant to which the Company issued and sold to the Investor the Shares for gross proceeds of $4.0 million and the Company entered into the July 2020 Registration Rights Agreement with the Investor.

On July 29, 2020, the Company sold 47,319 shares through the Purchase Agreement with Keystone for proceeds of $0.3 million, net of discount.

On July 30, 2020, the Company entered into a Securities Purchase Agreement (the "SPA"), with 3i, LP, as collateral agent and purchaser ("3i"), pursuant to which the Company issued in a private placement transaction (the "Convertible Debt Financing") its 7% Original Issue Discount Senior Secured Convertible Debenture (the "Debenture") in the principal amount of $8.64 million for a purchase price of $8.0 million, which reflects an original issue discount of approximately 8%.

The closing of the sale of the Debenture occurred on August 3, 2020 (the "Closing Date"). The Debenture will mature on the August 3, 2021. The Debenture will accrue interest at 7% per year and be convertible into shares of common stock at the holder's option, at a conversion price of $9.4125 per share, subject to certain customary adjustments.

Subject to the satisfaction of certain conditions, at any time, the Company may elect to redeem all or any portion of the Debenture for an amount equal to 115% of the outstanding principal balance being redeemed plus all accrued and unpaid interest on the amount being redeemed that would have accrued if the Debenture were held through the maturity date. The Company's obligations under the Debenture can be accelerated upon the occurrence of certain customary events of default and are secured under a Security Agreement by a lien on substantially all of the Company's assets, subject to certain exceptions.

The Debenture contains customary representations and warranties and affirmative and restrictive covenants, including limitations on indebtedness, liens, dispositions of assets, organizational document amendments, change of control transactions, stock repurchases, indebtedness repayments, dividends, affiliate transactions and certain other matters. The Debenture also provides that in connection with future capital raising transactions (subject to certain exceptions), the Company must offer to use 20% of the funds raised to redeem amounts outstanding under the Debenture. Any redemption in this circumstance will be at the election of the holder. In connection with the Convertible Debt Financing, the Company also entered into a registration rights agreement with 3i that affords 3i certain registration rights with respect to the shares of common stock underlying the Debenture.

On August 7, 2020, 12,377 units of Vaccinex Products, LP were exchanged for shares of the Company's common stock at par value of $0.0001 per share.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

References in this Quarterly Report on Form 10-Q, or this Report, to the "Company," "we," "our," or "us" mean Vaccinex, Inc. and its subsidiary except where the context otherwise requires You should read the following discussion and analysis of financial condition and results of operations together with our condensed consolidated financial statements and related notes included elsewhere in this Report, as well as the audited financial statements, related notes and Management's Discussion and Analysis of Financial Condition and Results of Operations and other disclosures included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, or the Annual Report.

Cautionary Note Regarding Forward-Looking Statements

The following discussion and other parts of this Report contain forward-looking statements that involve risk and uncertainties, such as statements of our plans, objectives, expectations and intentions. 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 ability to continue as a going concern;
- the impacts of the COVID-19 pandemic on the expected timing and progress of our clinical trials, as well as other impacts of the COVID-19 pandemic on the economy, our industry, and our business, financial condition and results of operations, including our ability to raise capital;
- the sufficiency of the financing arrangements we have entered into, including the loan we received under the Paycheck Protection Program that is intended to fund our payroll and certain other operations for a limited period of time;
- 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 the offerings of our common stock.

Although we believe that the expectations reflected in the forward-looking statements contained herein are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. 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. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the risk factors identified in the "Risk Factors" section of this Report, and in Part II, Item 1A of the Annual Report, as well as in our other filings with the Securities and Exchange Commission, or SEC. The forward-looking statements speak only as of the date they were made. Except as required by law, after the date of this Report, 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. We qualify all of our forward-looking statements by the foregoing cautionary statements.

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 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, pepinemab, an antibody that we believe utilizes novel mechanisms of action. We are focused on developing pepinemab for the treatment of non-small cell lung cancer, or NSCLC, Huntington's disease, and Alzheimer's disease. Additionally, third party investigators are studying pepinemab in clinical trials in osteosarcoma and melanoma as well as in "window of opportunity" studies in other indications. 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 Natural Killer T, or NKT, vaccine platform to discover product candidates that target and extend the activity of NKT cells. Our lead product candidate, pepinemab, is currently in clinical development for the treatment of NSCLC, osteosarcoma, and Huntington's disease, through our efforts or through investigator-sponsored trials, or 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. We reported a net loss of $6.5 million and $8.8 million for the three months ended June 30, 2020 and 2019, respectively, and a net loss of $13.7 and $17.9 million for the six months ended June 30, 2020 and 2019, respectively. As of June 30, 2020, and December 31, 2019, we had cash and cash equivalents of $0.5 million and $2.8 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. We may also encounter unforeseen expenses, difficulties, complications, delays and other unknown factors, including as a result of the COVID-19 pandemic, 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 recurring net losses and negative cash flows from operations raised substantial doubt regarding our ability to continue as a going concern within one year after the issuance of our consolidated financial statements for the year ended December 31, 2019. Until we can generate sufficient revenue from the commercialization of our product candidates, we expect to finance our operations through the public or private sale of equity, debt financings or other capital sources, such as government funding, collaborations, strategic alliances or licensing arrangements with third parties. For example, on January 23, 2020 and July 10, 2020 we closed private placements of shares of our common stock for aggregate gross proceeds of approximately $7.5 million and $4.0 million, respectively. On March 27, 2020, we announced that we had (i) entered into an Open Market Sale Agreement with Jefferies LLC, or Jefferies, and filed a related prospectus supplement pursuant to which we may issue and sell up to $11.5 million of shares of our common stock from time to time through Jefferies as sales agent and (ii) entered into a Purchase Agreement with Keystone Capital Partners, LLC, or Keystone, pursuant to which Keystone has agreed to purchase up to an aggregate of $5.0 million of shares of our common stock at our direction from time to time. During the second quarter of 2020, 317,688 shares were sold through the Open Market Sale Agreement for proceeds of $1.2 million, net of commission, and 324,424 shares were sold through the Purchase Agreement with Keystone for proceeds of $1.1 million, net of discount. Through June 30, 2020, we received total proceeds, net of underwriting discounts and commissions, before expenses of approximately $2.3 million through the Open Market Sale Agreement and the Purchase Agreement with Keystone. In addition, on May 8, 2020, we received a loan of approximately $1.1 million, or the PPP Loan, under the Paycheck Protection Program established as part of the Coronavirus Aid, Relief, and Economic Security Act, or the CARES Act, to provide loans to qualifying businesses to enable them to continue operations and keep their employees on payroll during the COVID-19 pandemic. For more information on the terms of the PPP Loan, see Note 8 to our unaudited condensed consolidated financial statements. We will need substantial additional capital to continue to support our ongoing operations. Our cash and cash equivalents were $0.5 million and total current assets were $2.6 million at June 30, 2020, which is insufficient to fund our planned operations for the quarter ending September 30, 2020. Subsequent to the end of the second quarter, we raised total proceeds of approximately $19.8 million, net of commissions and discounts before expenses, through four financing transactions: approximately $6.9 million through our Open Market Sale Agreement with Jefferies, $8.0 million through the sale of a senior secured convertible debenture that closed in August 2020, or the Convertible Debt Financing, $4.0 million through a July 2020 private placement transaction, and $300,000 through our Purchase Agreement with Keystone. We also received $575,000 of the previously announced $750,000 grant from the Alzheimer's Association under the 2020 Part the Cloud Program. While this additional capital will help to extend our available capital in the near term, there can be no assurances that we will be able to secure additional financing when needed, or if available, that it will be sufficient to meet our needs or on favorable terms.

In order to mitigate the spread of COVID-19, governments have imposed unprecedented restrictions on business operations, travel, and gatherings, resulting in a global economic downturn and other adverse economic and societal impacts, which has had an adverse impact on our strategic plans, certain of our clinical trial operations, and our ability to raise additional capital necessary to continue as a going concern. We had previously anticipated initiating a trial of pepinemab in Alzheimer's disease in mid-2020, but the initial enrollment date is now delayed until September 2020. In addition, as discussed above, to mitigate the impacts of the COVID-19 pandemic, including impacts on the Company's ability to raise capital and to maintain its personnel, the Company applied for and received the PPP Loan. We may experience further disruptions as a result of the COVID-19 pandemic that could adversely impact our business, including disruption of research and clinical development activities, plans for release of data, manufacturing, supply, and interactions with regulators and other third parties, and further difficulties in raising additional capital. The extent to which the COVID-19 pandemic may impact our business will depend on future developments, which are highly uncertain and cannot be predicted with confidence.

Financial Overview

Revenue

To date, we have not generated any revenue from product sales. During the six months ended June 30, 2019, we generated a limited amount of service revenue from our collaboration agreements, including with Surface Oncology, Inc. and Merck Sharp & Dohme Corp.

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.

	Three Months Ended June 30,				Six Months Ended June 30,			
	2020		2019		2020		2019	
	(in thousands)	%	(in thousands)	%	(in thousands)	%	(in thousands)	%
Clinical trial costs	$ 2,443	54%	$ 5,524	76%	$ 5,960	60%	$ 11,299	77%
Wages, benefits, and related costs	1,164	26%	1,031	14%	2,201	22%	1,916	13%
Preclinical supplies and equipment depreciation	442	10%	485	7%	926	9%	956	6%
Consulting, non-clinical trial services, and other	508	11%	264	3%	879	9%	545	4%
Total research and development expenses	$ 4,557		$ 7,304		$ 9,966		$ 14,716	

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.

Our current research and development activities primarily relate to clinical development in the following indications:

- **Non-Small Cell Lung Cancer (NSCLC).** We are evaluating pepinemab in combination with avelumab in NSCLC in our Phase 1b/2 CLASSICAL-Lung clinical trial. We announced in August 2019 that enrollment in this trial is complete and we announced near topline data for this trial at the virtual American Society of Clinical Oncology conference in late May 2020. This data suggested that immunotherapy naïve and PD-L1 negative or low patients achieved higher response rates with the combination than with avelumab alone.
- **Huntington's Disease (HD).** We are evaluating pepinemab for the treatment of HD in our Phase 2 SIGNAL trial. Enrollment in this trial, consisting of 265 subjects, was completed in December 2018. We expect topline data from this trial in early October 2020, and do not currently anticipate the SIGNAL trial or timing of topline data will be materially impacted by the COVID-19 pandemic.
- **Head & Neck Cancer.** The Company is preparing to initiate a new study of pepinemab in combination with an anti-PD-1 checkpoint inhibitor to treat front line head and neck cancer in the second half of 2020.
- **Alzheimer's Disease.** After a delay caused by the COVID-19 pandemic, we expect to initiate a clinical trial of pepinemab in Alzheimer's disease in September 2020.
- Pepinemab is also being evaluated by third parties in investigator-sponsored trials, or ISTs, for osteosarcoma and melanoma, and in multiple "window of opportunity" studies in additional cancer indications.

Results of Operations

The following table set forth our results of operations for the periods presented (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Revenue	$ -	$ 25	$ -	$ 119
Costs and expenses:				
Cost of revenue	-	16	-	191
Research and development	4,557	7,304	9,966	14,716
General and administrative	1,943	1,563	3,693	3,210
Total costs and expenses	6,500	8,883	13,659	18,117
Loss from operations	(6,500)	(8,858)	(13,659)	(17,998)
Other expense, net	(1)	30	9	103
Loss before provision for income taxes	(6,501)	(8,828)	(13,650)	(17,895)
Provision for income taxes	-	-	-	-
Net loss	(6,501)	(8,828)	(13,650)	(17,895)
Net loss attributable to noncontrolling interests	-	-	-	-
Net loss attributable to Vaccinex, Inc.	$ (6,501)	$ (8,828)	$ (13,650)	$ (17,895)

Comparison of the Three Months Ended June 30, 2020 and 2019

Operating Expenses

	Three Months Ended June 30,			
	2020	2019	$ Change	% Change
	(in thousands)			
Research and development	$ 4,557	$ 7,304	$ (2,747)	(38)%
General and administrative	1,943	1,563	380	24%
Total operating expenses	$ 6,500	$ 8,867	$ (2,367)	(27)%

Research and Development. Research and development expenses in the three months ended June 30, 2020 decreased by $2.7 million, or 38%, compared to the three months ended June 30, 2019. This decrease was primarily attributable to decreases in expenses in the CLASSICAL-Lung and SIGNAL studies, as patients have come off study.

General and Administrative. General and administrative expenses in the three months ended June 30, 2020 increased by $0.4 million, or 24%, compared to the six months ended June 30, 2019. The increase was due to increased stock-based compensation as a result of new option awards to employees and board members, as well as increased directors and officers insurance costs.

Comparison of the Six Months Ended June 30, 2020 and 2019

Operating Expenses

	Six Months Ended June 30,			
	2020	2019	$ Change	% Change
	(in thousands)			
Research and development	$ 9,966	$ 14,716	$ (4,750)	(32)%
General and administrative	3,693	3,210	483	15%
Total operating expenses	$ 13,659	$ 17,926	$ (4,267)	(24)%

Research and Development. Research and development expenses in the six months ended June 30, 2020 decreased by $4.8 million, or 32%, compared to the six months ended June 30, 2019. This decrease was primarily attributable to decreases in expenses in the CLASSICAL-Lung and SIGNAL studies, as patients have come off study.

General and Administrative. General and administrative expenses in the six months ended June 30, 2020 increased by $0.5 million, or 15%, compared to the six months ended June 30, 2019. The increase was due to increased stock-based compensation as a result of new option awards to employees and board members, as well as increased directors and officers insurance costs.

Liquidity and Capital Resources

To date, we have not generated any revenue from product sales. Since our inception in 2001, we have relied on public and private sales of equity and debt financing to fund our operations, in addition to capital contributions from noncontrolling interests and limited service revenue from collaboration agreements.

In August 2018, we completed an initial public offering of our common stock. We received net proceeds of $37.2 million after deducting underwriting discounts and commissions of $2.8 million.

In July 2019, January 2020, and July 2020, we completed private placements of our common stock and received gross proceeds of $13.8 million, $7.5 million, and $4.0 million, respectively. Additionally, on March 27, 2020, we announced that we had (i) entered into an Open Market Sale Agreement with Jefferies and filed a prospectus supplement pursuant to which we may issue and sell up to $11.5 million of shares of our common stock from time and (ii) entered into a Purchase Agreement with Keystone pursuant to which Keystone has agreed to purchase up to an aggregate of $5.0 million of shares of our common stock from time to time. On May 8, 2020, we received the PPP Loan in the amount of $1.1 million. During the second quarter of 2020, 317,688 shares were sold through the Open Market Sale Agreement for proceeds of $1.2 million, net of commission, and 324,424 shares were sold through the Purchase Agreement with Keystone for proceeds of $1.1 million, net of discount. Subsequent to the end of the second quarter, we raised total proceeds of approximately $19.8 million, net of commissions and discounts and before expenses, through four financing transactions: $6.9 million through our Open Market Sale Agreement with Jefferies, $8.0 million through the Convertible Debt Financing discussed below, $4.0 million through the July 2020 private placement transaction, and $300,000 through our Purchase Agreement with Keystone. We also received $575,000 of the previously announced $750,000 grant from the Alzheimer's Association under the 2020 Part the Cloud Program. While the Open Market Sale Agreement does not include a limitation on the total amount of sales that we may sell under the agreement, our sales under the agreement are restricted by what we have registered for sale. As of the date of the filing of the Quarterly Report, we have sold the full $11.5 million of shares that we previously registered for sale pursuant to the Open Market Sale Agreement, and we will not be able to sell additional shares under the agreement until we register additional shares.

We entered into a Securities Purchase Agreement, or the SPA, with 3i, LP, as collateral agent and purchaser, or 3i, or the Convertible Debt Financing. Pursuant to the SPA, we issued our 7% Original Issue Discount Senior Secured Convertible Debenture, or the Debenture, in the principal amount of $8.64 million for a purchase price of $8.0 million, which reflects an original issue discount of approximately 8%. We issued the Debenture on August 3, 2020, and the Debenture will mature on August 3, 2021. The Debenture will accrue interest at 7% per year and be convertible shares of our common stock at a conversion price of $9.4125 per share, subject to certain customary adjustments. Subject to the satisfaction of certain conditions, at any time, we may elect to redeem all or any portion of the Debenture for an amount equal to 115% of the outstanding principal balance being redeemed plus all accrued and unpaid interest on the amount being redeemed that would have accrued if the Debenture were held through the maturity date. Our obligations under the Debenture can be accelerated upon the occurrence of certain customary events of default and are secured under a Security Agreement by a lien on substantially all of our assets, subject to certain exceptions.

The Debenture contains customary representations and warranties and affirmative and restrictive covenants, including limitations on indebtedness, liens, dispositions of assets, organizational document amendments, change of control transactions, stock repurchases, indebtedness repayments, dividends, affiliate transactions and certain other matters. The Debenture also provides that in connection with future capital raising transactions, subject to certain exceptions, at the election of the holder we must use 20% of the funds raised to redeem amounts outstanding under the Debenture.

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 June 30, 2020 and December 31, 2019, our principal source of liquidity was cash and cash equivalents in the amount of $0.5 million and $2.8 million, respectively.

Since our inception in 2001, we have incurred significant net losses and negative cash flows from operations. For the three months ended June 30, 2020 and 2019, we reported a net loss of $6.5 million and $8.8 million, respectively, and $13.7 and $17.9 million for the six months ended June 30, 2020 and 2019, respectively. As of June 30, 2020 and December 31, 2019, we had an accumulated deficit of $262.3 million and $248.6 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 risks associated with the development of new biopharmaceutical products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors, including as a result of the COVID-19 pandemic, that may adversely affect our business.

Until we can generate a sufficient amount of revenue from the commercialization of our product candidates, we expect to finance our operations through the public or private sale of equity, debt financings, or other capital sources, such as government funding, collaborations, strategic alliances or licensing arrangements with third parties. We intend to use the net proceeds from our recent private placement, the agreements with Jefferies and Keystone, the Convertible Debt Financing, and the funding we received and expect to receive in 2020 from the Alzheimer's Association and the Alzheimer's Drug Discovery Foundation to fund the ongoing development of pepinemab and for working capital and general corporate purposes. We have used and intend to continue to use the funds from the PPP Loan as required for loan forgiveness-eligible purposes under the CARES Act, including payroll, benefits, rent and utilities.

Financing strategies we may pursue include, but are not limited to, the public or private sale of equity, debt financings or funds from other capital sources, such as government funding, collaborations, strategic alliances or licensing arrangements with third parties. There can be no assurances additional capital will be available to secure additional financing, or if available, that it will be sufficient to meet our needs on favorable terms. 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. In addition, the Debenture also provides that in connection with future capital raising transactions (subject to certain exceptions), at the election of the holder we must use 20% of the funds raised to redeem amounts outstanding under the Debenture. If we raise additional funds through the public or private sale of equity or debt financings, it could result in dilution to our existing stockholders or 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.

Cash Flows

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

	Six Months Ended June 30,	
	2020	2019
	(in thousands)	
Cash used in operating activities	$ (12,958)	$ (14,422)
Cash provided by (used in) investing activities	(254)	14,083
Cash provided by financing activities	10,962	-

Operating Activities. We have historically experienced negative cash flows as we have 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 six months ended June 30, 2020, operating activities used $13.0 million in cash, primarily as a result of our net loss of $13.7 million.

During the six months ended June 30, 2019, operating activities used $14.4 million in cash, primarily as a result of our net loss of $17.9 million.

Investing Activities. Cash used in investing activities during the six months ended June 30, 2020 resulted from purchases of property and equipment. Cash provided by investing activities during the six months ended June 30, 2019 resulted from sales and maturities of marketable securities.

Financing Activities. During the six months ended June 30, 2020, financing activities provided $11.0 million, of which $7.5 million was attributable to the private placement of common stock, $2.3 million, net of underwriting commissions and discounts was due to the issuance of the Company's common stock pursuant to the Open Market Sale Agreement and Purchase Agreement with Keystone, and $1.1 million was from long-term debt.

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements as defined in the rules and regulations of the SEC.

JOBS Act Accounting Election

We are an "emerging growth company" within the meaning of the Jumpstart Our Business Startups Act or 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 condensed consolidated financial statements may not be comparable to companies that comply with public company effective dates of such accounting standards.

Critical Accounting Policies and Estimates

Our unaudited condensed consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these condensed 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.

There have been no material changes to our critical accounting policies and significant judgments as compared to the critical accounting policies and estimates disclosed in our Annual Report on Form 10-K for the year ended December 31, 2019.

Impact of Recent Accounting Pronouncements

For a discussion on the impact of recent accounting pronouncements on our business, see Note 2 to our unaudited condensed consolidated financial statements.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

As a smaller reporting company, we are not required to provide the information required by this item.

Item 4. Controls and Procedures

Evaluation of disclosure controls and procedures

Our management, with the participation of our Chief Executive Officer (our principal executive officer) and Chief Financial Officer (our principal financial officer), evaluated the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, as of June 30, 2020, the end of the period covered by this Form 10-Q. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of June 30, 2020, our disclosure controls and procedures were effective.

Changes in internal control over financial reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended June 30, 2020 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Most of our employees are working remotely due to the COVID-19 pandemic. However, we have not experienced any changes to our internal control arising from the COVID-19 pandemic that have materially affected or that are reasonably likely to materially affect our internal control over financial reporting. We are continually monitoring and assessing the COVID-19 pandemic and the impact it may have on our operations, including our internal control.

Part II - OTHER INFORMATION

Item 1A. Risk Factors

An investment in our stock involves a high degree of risk. You should carefully consider the risks set forth in this section, and in Part I, Item 1A of the Annual Report, and all of the other information set forth in this Report, the Annual Report, and in the other reports we file with the SEC. If any of the risks contained in those reports actually occur, our business, results of operation, financial condition, and liquidity could be harmed, the value of our securities could decline and you could lose all or part of your investment. Other than the addition of the text below, there have been no material changes from risk factors disclosed in the Annual Report. See the discussion of the Company's risk factors under Part I, Item 1A. of the Annual Report.

We will require additional capital to finance our operations to continue as a going concern, 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 and have identified conditions that raise substantial doubt about our ability to continue as a going concern.

Our recurring net losses and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern within one year after the issuance of our consolidated financial statements as of and for the year ended December 31, 2019, as discussed in Note 1 to our consolidated financial statements as of and for the year ended December 31, 2019 included in our Annual Report. Our independent registered public accounting firm also noted this in their report issued on our consolidated financial statements for the years ended December 31, 2019, and 2018. Further, our cash and cash equivalents were $0.5 million and total current assets were $2.6 million at June 30, 2020, which is insufficient to fund our planned operations for the quarter ending September 30, 2020. 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. For the foreseeable future, we will have to raise additional working capital to fund our operations. However, no assurance can be given that additional financing will be available, or, if available, will be on terms acceptable to us. Our financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Our operations have consumed substantial amounts of cash since our inception. We expect to continue to spend substantial amounts to advance the clinical development of our product candidates. Given our projected operating requirements and our existing cash and cash equivalents and marketable securities, we obtained $7.5 million and $4.0 million of financing through private placements of our common stock in January 2020 and July 2020, respectively, and on March 27, 2020, we announced that we had (i) entered into the Open Market Sale Agreement with Jefferies and filed a related prospectus supplement pursuant to which we may issue and sell up to $11.5 million of shares of our common stock from time to time through Jefferies as sales agent and (ii) entered into the Purchase Agreement with Keystone pursuant to which Keystone has agreed to purchase up to an aggregate of $5.0 million of shares of the Company's common stock at the Company's direction from time to time. During the second quarter of 2020, 317,688 shares were sold through the Open Market Sale Agreement for proceeds of $1.2 million, net of commission, and 324,424 shares were sold through the Purchase Agreement with Keystone for proceeds of $1.1 million, net of discount. Subsequent to the end of the second quarter, we raised total proceeds of approximately $19.8 million, net of commissions and discounts and before expenses, through four financing transactions: $6.9 million through our Open Market Sale Agreement with Jefferies, $8.0 million through the Convertible Debt Financing, $4.0 million through the July 2020 private placement transaction, and $300,000 through our Purchase Agreement with Keystone. We also received $575,000 of the previously announced $750,000 grant from the Alzheimer's Association under the 2020 Part the Cloud Program.

Even with the arrangements described above, we will need to complete additional financing transactions in order to continue operations. These arrangements may also not be sufficient in the near-term. Given, among other things, the current economic uncertainty associated with the COVID-19 pandemic, our recent stock price performance, limitations under Form S-3 as to what we can register for sale, our arrangements with Jefferies and Keystone and other financing strategies we may pursue may not be sufficient to fund our operations in the near term. There can be no assurances that we will be able to secure additional financing, or if available, that it will be sufficient to meet our needs or on favorable terms.

On May 8, 2020, we received the PPP Loan for approximately $1.1 million under the Paycheck Protection Program. However, the PPP Loan was only sufficient to fund our payroll and other eligible expenses for a limited period of time.

Circumstances may also cause us to consume capital even 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.

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. 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 our operations and 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. 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 our operations and the development of one or more of our product candidates or cease operations.

We may not be able to pay our indebtedness at maturity.

On May 8, 2020, we received the PPP Loan for approximately $1.1 million under the Paycheck Protection Program. On August 3, 2020, we issued the Debenture, which has a principal amount of $8.64 million, an interest rate of 7% per annum and matures on August 3, 2021. Our ability to make payments on our indebtedness depends on our future performance and capital raising activities, which are subject to economic, financial, competitive and other factors beyond our control.

While all or a portion of the PPP Loan may be forgiven if the PPP Loan is used for qualifying expenses as described in the CARES Act, if we seek forgiveness there is no assurance that we will be able to obtain forgiveness, notwithstanding that we believe we have used the PPP Loan for qualifying expenses. The U.S. Department of the Treasury, Small Business Administration and members of Congress have indicated an intention to provide strong oversight of loans granted under the Paycheck Protection Program. If we are audited or reviewed or our records are subpoenaed by the government as a result of entering into the PPP Loan, it could divert management's time and attention and we could incur legal and reputational costs, and an adverse finding could lead to the requirement to return the PPP Loan, which could reduce our liquidity, or could subject us to fines and penalties.

While the holder of the Debenture may seek to convert the Debenture into shares of our common stock, there is no assurance that the holder will seek to do so, including because the conversion price for the Debenture is currently $9.4125 per share, and our stock price is currently trading below that level. Furthermore, the Debenture s secured under a Security Agreement by a lien on substantially all of the Company's assets, subject to certain exceptions, and if we default, the holder will have rights to those assets. In addition, the Debenture also provides that in connection with future capital raising transactions (subject to certain exceptions), at the election of the holder we must use 20% of the funds raised to redeem amounts outstanding under the Debenture, which will further limit the use of proceeds we may obtain from future capital raising transactions.

Our business is not expected to generate cash flow from operations in the future sufficient to pay our debt at maturity. Accordingly, we expect to have to raise additional capital in the future, either through restructuring debt, or obtaining additional equity capital, or pursuing other alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations. Furthermore, the existence of our indebtedness, and the terms associated with it, particularly our recently issued Debenture, could more generally make it difficult for us to raise additional capital.

The COVID-19 pandemic has adversely impacted and will continue to adversely impact our business, including our clinical development plans and our ability to raise capital.

Since December 2019, the COVID-19 pandemic has spread to multiple countries, including the United States, and has caused significant disruptions around the world. In order to mitigate the spread of COVID-19, governments have imposed unprecedented restrictions on business operations, travel, and gatherings, resulting in a global economic downturn and other adverse economic and societal impacts, which has had an adverse impact our strategic plans, certain of our clinical trial operations, and our ability to raise additional capital necessary to continue as a going concern. We had previously anticipated beginning enrollment in mid-2020 in our study of pepinemab in Alzheimer's Disease, but the initial enrollment date is now delayed until September 2020. In addition, to mitigate the impact of the COVID-19 pandemic including impacts on the Company's ability to raise capital and to maintain its personnel, the Company applied for and received the PPP Loan.

We may experience further disruptions as a result of the COVID-19 pandemic that could severely impact our business, including:

- interruption of key manufacturing, research and clinical development activities due to limitations on work and travel imposed or recommended by federal or state governments, employers and others;
- delays or difficulties in clinical trial site operations, including difficulties in recruiting clinical site investigators and clinical site staff and difficulties in enrolling patients or meeting protocol-specified procedures, including difficulties in adhering to protocol-mandated visits, treating patients, and testing in active trials;
- interruption of key business activities due to illness and/or quarantine of key individuals and delays associated with recruiting, hiring and training new temporary or permanent replacements for such key individuals, both internally and at our third-party service providers;
- delays in research and clinical trial sites receiving the supplies and materials needed to conduct preclinical studies and clinical trials, due to work stoppages, travel and shipping interruptions or restrictions or other reasons;
- further difficulties in raising additional capital needed to avoid furloughs and layoffs and pursue the development of our programs due to the slowing of our economy and near term and/or long-term negative effects of the pandemic on the financial, banking and capital markets, including as a result of ongoing impacts on our stock price;
- changes in local regulations as part of a response to the COVID-19 pandemic that may require us to change the ways in which research, including clinical development, is conducted, which may result in unexpected costs; and
- delays in necessary interactions with regulators, ethics committees and other important agencies and contractors due to limitations in employee resources, travel restrictions or forced furlough of government employees.

The COVID-19 pandemic and its impacts continue to rapidly evolve. The extent to which the COVID-19 pandemic will further impact our business will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the ultimate geographic spread of the disease, the duration of the outbreak, travel restrictions, and social distancing in the United States and other countries, business closures or business disruptions, and the effectiveness of actions taken in the United States and other countries to contain and treat the virus and resolve its impacts.

Item 6. Exhibits

INDEX TO EXHIBITS

Exhibit No.	Description
4.1*	7% Original Issue Discount Senior Convertible Debenture due August 3, 2021.
10.1	Stock Purchase Agreement by and between the Company and Friedberg Global-Macro Hedge Fund, Ltd., dated as of July 9, 2020 (incorporated by reference herein from exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on July 10, 2020).
10.2	Registration Rights Agreement by and between the Company and the Friedberg Global-Macro Hedge Fund, Ltd., dated as of July 10, 2020 (incorporated by reference herein from Exhibit 10.2 from the Company's Current Report on Form 8-K filed with the SEC on July 10, 2020).
10.3	Note by and between the Company and Five Star Bank, dated May 8, 2020 (incorporated by reference herein from Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q filed on May 14, 2020).
10.4	Securities Purchase Agreement by and between the Company and 3i, LP, dated as of July 30, 2020 (incorporated by reference herein from Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on July 31, 2020).
10.5*	Registration Rights Agreement, dated August 3, 2020, by and among the Company and 3i, LP.
10.6*	Security Agreement, dated July 31, 2020, by and between the Company and 3i, LP, as Collateral Agent.
31.1*	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification of Chief Executive Officer and Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350
101*	The following items from this Quarterly Report on Form 10-Q formatted in Extensible Business Reporting Language: (i) Condensed Consolidated Balance Sheets (Unaudited), (ii) Condensed Consolidated Statements of Operations (Unaudited), (iii) Consolidated Statements of Stockholders' Deficit (Unaudited), (iv) Condensed Consolidated Statements of Cash Flows (Unaudited), and (v) Notes to Condensed Consolidated Financial Statements (Unaudited)

* Filed or furnished herewith, as applicable.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Vaccinex, Inc.
(Registrant)

August 14, 2020 By: /s/ Maurice Zauderer
Maurice Zauderer, Ph.D.
President & Chief Executive Officer
(Principal Executive Officer)

August 14, 2020 By: /s/ Scott E. Royer
Scott E. Royer, CFA, MBA
Chief Financial Officer
(Principal Financial Officer)

NEITHER THIS SECURITY NOR THE SECURITIES INTO WHICH THIS SECURITY IS CONVERTIBLE HAVE BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS. THIS SECURITY AND THE SECURITIES ISSUABLE UPON CONVERSION OF THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT WITH A REGISTERED BROKER-DEALER OR OTHER LOAN WITH A FINANCIAL INSTITUTION THAT IS AN "ACCREDITED INVESTOR" AS DEFINED IN RULE 501(a) UNDER THE SECURITIES ACT OR OTHER LOAN SECURED BY SUCH SECURITIES.

Original Issue Date: August 3, 2020
Original Conversion Price (subject to adjustment herein): $9.4125

$8,640,000

7% ORIGINAL ISSUE DISCOUNT SENIOR SECURED CONVERTIBLE DEBENTURE
DUE AUGUST 3, 2021

THIS 7% ORIGINAL ISSUE DISCOUNT SENIOR SECURED CONVERTIBLE DEBENTURE is one of a series of duly authorized and validly issued 7% Original Issue Discount Senior Secured Convertible Debentures of Vaccinex, Inc., a Delaware corporation (the "Company"), having its principal place of business at 1895 Mount Hope Avenue, Rochester, New York 14620, designated as its 7% Original Issue Discount Senior Secured Convertible Debenture due August 3, 2021 (this debenture, the "Debenture" and, collectively with the other debentures of such series, the "Debentures").

FOR VALUE RECEIVED, the Company promises to pay to 3i, LP or its registered assigns (the "Holder"), or shall have paid pursuant to the terms hereunder, the principal sum of $8,640,000 on August 3, 2021 (the "Maturity Date") or such earlier date as this Debenture is required or permitted to be repaid as provided hereunder, and to pay interest to the Holder on the aggregate unconverted and then outstanding principal amount of this Debenture in accordance with the provisions hereof. This Debenture is subject to the following additional provisions:

Section 1. Definitions. For the purposes hereof, in addition to the terms defined elsewhere in this Debenture, (a) capitalized terms not otherwise defined herein shall have the meanings set forth in the Purchase Agreement and (b) the following terms shall have the following meanings:

"Alternate Consideration" shall have the meaning set forth in Section 5(e).

"Bankruptcy Event" means any of the following events: (a) the Company or any Significant Subsidiary (as such term is defined in Rule 1-02(w) of Regulation S-X) thereof commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Company or any Significant Subsidiary thereof, (b) there is commenced against the Company or any Significant Subsidiary thereof any such case or proceeding that is not dismissed within 60 days after commencement, (c) the Company or any Significant Subsidiary thereof is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered, (d) the Company or any Significant Subsidiary thereof suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 calendar days after such appointment, (e) the Company or any Significant Subsidiary thereof makes a general assignment for the benefit of creditors, (f) the Company or any Significant Subsidiary thereof calls a meeting of its creditors with a view to arranging a composition, adjustment or restructuring of its debts, (g) the Company or any Significant Subsidiary thereof admits in writing that it is generally unable to pay its debts as they become due, (h) the Company or any Significant Subsidiary thereof, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action for the purpose of effecting any of the foregoing.

"Beneficial Ownership Limitation" shall have the meaning set forth in Section 4(d).

"Business Day" means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to "stay at home", "shelter-in-place", "non-essential employee" or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York are generally are open for use by customers on such day.

"Buy-In" shall have the meaning set forth in Section 4(c)(v).

"Change of Control Transaction" means the occurrence after the date hereof of any of (a) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) promulgated under the Exchange Act) other than Albert D. Friedberg, FCMI Parent Co. and their respective Affiliates and Albert D. Friedberg's heirs and any trust established by him of effective control (whether through legal or beneficial ownership of capital stock of the Company, by contract or otherwise) of in

excess of 60% of the voting securities of the Company (other than by means of conversion or exercise of the Debentures and the Securities issued together with the Debentures), (b) the Company merges into or consolidates with any other Person, or any Person merges into or consolidates with the Company and, after giving effect to such transaction, the stockholders of the Company immediately prior to such transaction own less than 60% of the aggregate voting power of the Company or the successor entity of such transaction, or (c) the Company (and all of its Subsidiaries, taken as a whole) sells or transfers all or substantially all of its assets to another Person other than one or more of the Company's direct or indirect wholly-owned Subsidiaries and the stockholders of the Company immediately prior to such transaction own less than 50% of the aggregate voting power of the acquiring entity immediately after the transaction, or (d) a majority of the seats (other than vacant seats) of the Board of Directors of the Company shall at any time cease to be occupied by persons (i) who were members of the Board of Directors on the Original Issue Date, (ii) who were nominated or elected to the Board of Directors, or whose nomination or election was approved, by individuals referred to in clause (i) constituting at the time of such election, nomination or approval at least a majority of the members of the Board of Directors or (iii) who were nominated or elected to the Board of Directors, or whose nomination or election was approved, by individuals referred to in clauses (i) and (ii) above constituting at the time of such election, nomination or approval at least a majority of the Board of Directors.

"Conversion" shall have the meaning ascribed to such term in Section 4.

"Conversion Date" shall have the meaning set forth in Section 4(a).

"Conversion Price" shall have the meaning set forth in Section 4(b).

"Conversion Schedule" means the Conversion Schedule in the form of Schedule 1 attached hereto.

"Conversion Shares" means, collectively, the shares of Common Stock issuable upon conversion of this Debenture in accordance with the terms hereof.

"Effectiveness Period" shall have the meaning set forth in the Registration Rights Agreement.

"Equity Condition" means, during the period in question, (a) (i) there is an effective Registration Statement pursuant to which the Holder is permitted to utilize the prospectus thereunder to resell all of the shares of Common Stock issuable pursuant to the Transaction Documents (and the Company believes, in good faith, that such effectiveness will continue uninterrupted for the foreseeable future) or (ii) all of the Conversion Shares issuable pursuant to the Transaction Documents may be resold pursuant to Rule 144, (b) the Company shall have honored all conversions and redemptions scheduled to occur or occurring by virtue of one or more Notices of Conversion of the Holder, if any, and (c) there is a sufficient number of authorized but

unissued and otherwise unreserved shares of Common Stock for the issuance of all of the shares then issuable pursuant to the Transaction Documents.

"Event of Default" shall have the meaning set forth in Section 8(a).

"Fundamental Transaction" shall have the meaning set forth in Section 5(e).

"Intellectual Property" shall have the meaning ascribed to such term in the Security Agreement.

"Late Fees" shall have the meaning set forth in Section 2(c).

"Mandatory Default Amount" means the sum of (a) 100% of the outstanding principal amount of this Debenture, plus 100% of accrued and unpaid interest hereon, provided, however, that in the event that the Event of Default directly or indirectly prevents the Holder from converting this Debenture or disposing of the Conversion Shares, instead of the foregoing the following amount shall be used if greater than the foregoing: the outstanding principal amount of this Debenture, plus all accrued and unpaid interest hereon, divided by the Conversion Price on the date the Mandatory Default Amount is either (A) demanded (if demand or notice is required to create an Event of Default) or, if not required, otherwise due, or (B) paid in full (whichever has a lower Conversion Price) multiplied by the VWAP on the date the Mandatory Default Amount is either (x) demanded or, if demand is not required, otherwise due, or (y) paif in full, whichever has a higher VWAP, and (b) all other amounts, costs, expenses and liquidated damages due in respect of this Debenture.

"Net Cash Proceeds" shall mean with respect to any Mandatory Redemption Financing, the gross cash proceeds received by the Company therefrom less all reasonable and customary out-of-pocket legal, underwriting and other fees and expenses incurred in connection therewith less all taxes paid or reasonably estimated to be payable as a result thereof.

"New York Courts" shall have the meaning set forth in Section 9(d).

"Notice of Conversion" shall have the meaning set forth in Section 4(a).

"Optional Redemption" shall have the meaning set forth in Section 6(a).

"Optional Redemption Amount" means the sum of (a) 115% of the then outstanding principal amount of the Debenture, (b) accrued but unpaid interest as of the Optional Redemption Date and (c) all costs, expenses and other amounts due as of the Optional Redemption Date in respect of the Debenture.

"Optional Redemption Date" shall have the meaning set forth in Section 6(a).

"Optional Redemption Notice" shall have the meaning set forth in Section 6(a).

"Optional Redemption Notice Date" shall have the meaning set forth in Section 6(a).

"Optional Redemption Period" shall have the meaning set forth in Section 6(a).

"Original Issue Date" means the date of the first issuance of the Debentures, regardless of any transfers of any Debenture and regardless of the number of instruments which may be issued to evidence such Debentures.

"Permitted Indebtedness" means (a) the indebtedness evidenced by the Debentures, (b) any Indebtedness existing on the Original Issue Date, (c) lease obligations and purchase money indebtedness of up to $500,000, in the aggregate, incurred in connection with the acquisition of capital assets and lease obligations with respect to newly acquired or leased assets (d) trade accounts payable incurred in the ordinary course of business, (e) endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business, (f) vendor payment guarantees entered into in the ordinary course of business and consistent with past practices, (g) indebtedness that (i) is expressly subordinate to the Debentures pursuant to a written subordination agreement with the Purchasers that is acceptable to each Purchaser in its sole and absolute discretion and (ii) matures at a date later than the 91st day following the Maturity Date, (h) Indebtedness in respect of obligations relating to corporate credit cards, purchase cards or bank card products, (i) Indebtedness consisting of intercompany loans and advances among the Company and its Subsidiaries, (j) guarantees of Indebtedness otherwise permitted hereunder, (k) funds or credit or other support received by the Company or any Subsidiary of the Company from, or with the credit or other support of, any governmental authority, and incurred with the intent to mitigate (in the good faith determination of the Company) through liquidity or other financial relief the impact of the COVID-19 global pandemic on the business and operations of the Company and its Subsidiaries and (l) unsecured Indebtedness in an aggregate amount not to exceed $100,000 at any one time outstanding.

"Permitted Licenses" means, collectively, (a) licenses of over-the-counter software that is commercially available to the public, (b) intercompany licenses or grants of rights for development, manufacture, production, commercialization (including commercial sales to end users), marketing, co-promotion, or distribution among the Company and its Subsidiaries and (c) any non-exclusive or exclusive license of (or covenant not to sue with respect to) Intellectual Property or technology or a grant of rights for development, manufacture, production, commercialization (including commercial sales to end users), marketing, co-promotion, or distribution.

"Permitted Lien" means the individual and collective reference to the following: (a) Liens for taxes, assessments and other governmental charges or levies not otherwise delinquent or Liens for taxes, assessments and other governmental charges or levies

being contested in good faith and by appropriate proceedings for which adequate reserves (in the good faith judgment of the management of the Company) have been established in accordance with GAAP, (b) Liens imposed by law which were incurred in the ordinary course of the Company's business, such as carriers', warehousemen's and mechanics' Liens, statutory landlords' Liens, and other similar Liens arising in the ordinary course of the Company's business, and which (x) do not individually or in the aggregate materially detract from the value of such property or assets or materially impair the use thereof in the operation of the business of the Company and its consolidated Subsidiaries or (y) are being contested in good faith by appropriate proceedings, which proceedings have the effect of preventing for the foreseeable future the forfeiture or sale of the property or asset subject to such Lien, (c) Liens incurred in connection with Permitted Indebtedness under clauses (a), (b) and (g) thereunder, (d) Liens incurred in connection with Permitted Indebtedness under clause (c) thereunder, provided that such Liens are not secured by assets of the Company or its Subsidiaries other than the assets so acquired or leased, (e) Liens existing on the Original Issue Date, (f) Permitted Licenses, (g) banker's liens, rights of set-off and Liens in favor of financial institutions incurred in the ordinary course of business arising in connection with bank accounts and securities accounts, (h) Liens arising from judgments, decrees or attachments in circumstances not constituting an Event of Default, (i) easements, reservations, rights-of-way, restrictions, minor defects or irregularities in title and similar charges or encumbrances affecting real property not constituting a Material Adverse Effect, (j) any interest of title of a lessor under, and Liens arising from UCC financing statements (or equivalent filings, registrations or agreements in foreign jurisdictions) relating to, leases not prohibited by this Agreement and the filing of UCC financing statements as a precautionary measure with respect thereto, (k) pledges or deposits in the ordinary course of business in connection with workers' compensation, unemployment insurance and other social security legislation, (l) deposits to secure the performance of bids, trade contracts and leases (other than Indebtedness), statutory obligations, surety and appeal bonds, indemnity and performance bonds and other obligations of a like nature incurred in the ordinary course of business, (m) licenses, sublicenses, leases or subleases (other than relating to Intellectual Property) granted to others in the ordinary course of business not interfering in any material respect with the business of the Company and its Subsidiaries, (n) pledges and deposits in the ordinary course of business securing liability to insurance carriers providing property, casualty or liability insurance to the Company or any Subsidiary (including obligations in respect of letters of credit or bank guarantees for the benefit of such insurance carriers), (o) rights of first refusal, voting, redemption, transfer or other restrictions (including call provisions and buy-sell provisions) with respect to the equity interests of any joint venture, (p) to the extent constituting a Lien, cash escrow arrangements securing indemnification obligations associated with an acquisition or other investment, (q) Liens solely on cash earnest money deposits made by the Company or any of its Subsidiaries in connection with any letter of intent or purchase agreement for an acquisition or other investment and (r) other Liens securing Indebtedness or other obligations, in an aggregate amount not to exceed $50,000 outstanding at any one time.

"Product" means any drug, antibody or drug or antibody discovery platform advertised, developed, imported, manufactured, marketed, offered for sale, promoted, sold, tested, used or otherwise distributed by the Company or any Subsidiary in connection with or that embody, in whole or in part, the Intellectual Property.

"Purchase Agreement" means the Securities Purchase Agreement, dated as of July 30, 2020 among the Company and the original Holders, as amended, modified or supplemented from time to time in accordance with its terms.

"Registration Rights Agreement" means the Registration Rights Agreement, dated as of the date of the Purchase Agreement, among the Company and the original Holders, in the form of Exhibit B attached to the Purchase Agreement.

"Registration Statement" means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale of the Underlying Shares by each Holder as provided for in the Registration Rights Agreement.

"Securities Act" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

"Share Delivery Date" shall have the meaning set forth in Section 4(c)(ii).

"Successor Entity" shall have the meaning set forth in Section 5(e).

"Trading Day" means a day on which the principal Trading Market is open for trading.

"Trading Market" means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the New York Stock Exchange, the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, OTCQB or OTCQX (or any successors to any of the foregoing).

"VWAP" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair

market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

Payment of Interest in Cash. a) The Company shall pay interest to the Holder on the aggregate unconverted and then outstanding principal amount of this Debenture at the rate of 7% per annum, payable on each Conversion Date (as to that principal amount then being converted), on each Optional Redemption Date (as to that principal amount then being redeemed) and on the Maturity Date (each such date, an "Interest Payment Date") (if any Interest Payment Date is not a Business Day, then the applicable payment shall be due on the next succeeding Business Day), in cash. **Notwithstanding anything herein to the contrary, in the event that all or part of this Debenture is converted or redeemed, the interest payable hereunder shall be the full amount of interest that would have otherwise accrued if this Debenture were held until the Maturity Date.**

Interest Calculations. b) Unless otherwise provided under this Debenture, interest shall be calculated on the basis of a 360-day year, consisting of twelve 30 calendar day periods, and shall accrue daily commencing on the Original Issue Date until payment in full of the outstanding principal, together with all accrued and unpaid interest, liquidated damages and other amounts which may become due hereunder, has been made.

Late Fee. All c) overdue accrued and unpaid interest to be paid hereunder shall entail a late fee at an interest rate equal to the lesser of 10% per annum or the maximum rate permitted by applicable law (the "Late Fees") which shall accrue daily from the date such interest is due hereunder through and including the date of actual payment in full.

Prepayment. d) Subject to compliance with Section 6, the Company shall have the option to prepay all or any portion of the principal amount of this Debenture without the prior written consent of the Holder.

Registration of Transfers and Exchanges. Section 3

Different Denominations. a) This Debenture is exchangeable for an equal aggregate principal amount of Debentures of different authorized denominations, as requested by the Holder surrendering the same; *provided that*, each such Debenture shall be in denominations of at least $500,000 or a higher integral multiple of $100,000 (or if less, the principal amount outstanding of the Debenture being exchanged). No service charge will be payable for such registration of transfer or exchange.

Investment Representations. b) This Debenture has been issued subject to certain investment representations of the original Holder set forth in the Purchase

Agreement and may be transferred or exchanged only in compliance with the Purchase Agreement and applicable federal and state securities laws and regulations.

b) Reliance on Debenture Register. Prior to due presentment for transfer to the Company of this Debenture, the Company and any agent of the Company may treat the Person in whose name this Debenture is duly registered on the Debenture Register as the owner hereof for the purpose of receiving payment as herein provided and for all other purposes, whether or not this Debenture is overdue, and neither the Company nor any such agent shall be affected by notice to the contrary.

Section 4. Conversion.

a) Voluntary Conversion. At any time after the Original Issue Date until this Debenture is no longer outstanding, this Debenture shall be convertible, in whole or in part, into shares of Common Stock at the option of the Holder, at any time and from time to time (subject to the conversion limitations set forth in Section 4(d) hereof). The Holder shall effect conversions by delivering to the Company a Notice of Conversion, the form of which is attached hereto as Annex A (each, a "Notice of Conversion"), specifying therein the principal amount of this Debenture to be converted and the date on which such conversion shall be effected (such date, the "Conversion Date"). If no Conversion Date is specified in a Notice of Conversion, the Conversion Date shall be the date that such Notice of Conversion is deemed delivered hereunder. No ink-original Notice of Conversion shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Conversion form be required. To effect conversions hereunder, the Holder shall not be required to physically surrender this Debenture to the Company unless the entire outstanding principal amount of this Debenture, plus all accrued and unpaid interest thereon, has been so converted in which case the Holder shall surrender this Debenture as promptly as is reasonably practicable after such conversion without delaying the Company's obligation to deliver the shares on the Share Delivery Date. Conversions hereunder shall have the effect of lowering the outstanding principal amount of this Debenture in an amount equal to the applicable conversion. The Holder and the Company shall maintain records showing the principal amount(s) converted and the date of such conversion(s). The Company may deliver an objection to any Notice of Conversion within one (1) Business Day of delivery of such Notice of Conversion. In the event of any dispute or discrepancy, the records of the Holder shall be controlling and determinative in the absence of manifest error. **The Holder, and any assignee by acceptance of this Debenture, acknowledge and agree that, by reason of the provisions of this paragraph, following conversion of a portion of this Debenture, the unpaid and unconverted principal amount of this Debenture may be less than the amount stated on the face hereof.**

b) Conversion Price. The conversion price in effect on any Conversion Date shall be equal to **$9.4125,** subject to adjustment herein (the "Conversion Price").

c) Mechanics of Conversion.

Conversion Shares Issuable Upon Conversion of Principal Amount. The number of Conversion Shares issuable upon a conversion hereunder shall be determined by the quotient obtained by dividing (x) the outstanding principal amount of this Debenture to be converted plus all accrued and unpaid interest thereon by (y) the Conversion Price.

i.

Delivery of Conversion Shares Upon Conversion. Not later than the two (2) Trading Days after each Conversion Date (the "Share Delivery Date"), the Company shall deliver, or cause to be delivered, to the Holder the Conversion Shares which, on or after the earlier of (i) the six month anniversary of the Original Issue Date or (ii) the Effective Date, shall be free of restrictive legends and trading restrictions. On or after the earlier of (i) the six-month anniversary of the Original Issue Date or (ii) the Effective Date, the Company shall deliver any Conversion Shares required to be delivered by the Company under this Section 4(c) electronically through the Depository Trust Company or another established clearing corporation performing similar functions.

ii.

Failure to Deliver Conversion Shares. If, in the case of any Notice of Conversion, such Conversion Shares are not delivered to or as directed by the applicable Holder by the Share Delivery Date, the Holder shall be entitled to elect by written notice to the Company at any time on or before its receipt of such Conversion Shares, to rescind such Conversion, in which event the Company shall promptly return to the Holder any original Debenture delivered to the Company and the Holder shall promptly return to the Company the Conversion Shares issued to such Holder pursuant to the rescinded Conversion Notice.

iii.

Obligation Absolute; Partial Liquidated Damages. The Company's obligations to issue and deliver the Conversion Shares upon conversion of this Debenture in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Company to the Holder in connection with the issuance of such Conversion Shares; provided, however, that such delivery shall not operate as a waiver by the Company of any such action the Company may have against the Holder. In the event the Holder of this Debenture shall elect to convert any or all of the outstanding principal amount hereof, the Company may not refuse conversion based on any claim that the Holder or anyone associated or affiliated with the Holder has been engaged in any violation of law, agreement or for any other reason, unless an injunction from a court, on notice to Holder, restraining

and or enjoining conversion of all or part of this Debenture shall have been sought and obtained, and the Company posts a surety bond for the benefit of the Holder in the amount of 150% of the outstanding principal amount of this Debenture, which is subject to the injunction, which bond shall remain in effect until the completion of arbitration/litigation of the underlying dispute and the proceeds of which shall be payable to the Holder to the extent it obtains judgment. In the absence of such injunction, the Company shall issue Conversion Shares or, if applicable, cash, upon a properly noticed conversion. If the Company fails for any reason to deliver to the Holder such Conversion Shares pursuant to Section 4(c)(ii) by the Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each $1,000 of principal amount being converted, $10 per Trading Day (increasing to $20 per Trading Day on the fifth (5th) Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Share Delivery Date until such Conversion Shares are delivered or Holder rescinds such conversion. Nothing herein shall limit a Holder's right to pursue actual damages or declare an Event of Default pursuant to Section 8 hereof for the Company's failure to deliver Conversion Shares within the period specified herein and the Holder shall have the right to pursue all remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief. The exercise of any such rights shall not prohibit the Holder from seeking to enforce damages pursuant to any other Section hereof or under applicable law.

v. Compensation for Buy-In on Failure to Timely Deliver Conversion Shares Upon Conversion. In addition to any other rights available to the Holder, if the Company fails for any reason to deliver to the Holder such Conversion Shares by the Share Delivery Date pursuant to Section 4(c)(ii), and if after such Share Delivery Date the Holder is required by its brokerage firm to purchase (in an open market transaction or otherwise), or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Conversion Shares which the Holder was entitled to receive upon the conversion relating to such Share Delivery Date (a "Buy-In"), then the Company shall (A) pay in cash to the Holder (in addition to any other remedies available to or elected by the Holder) the amount, if any, by which (x) the Holder's total purchase price (including any brokerage commissions) for the Common Stock so purchased exceeds (y) the product of (1) the aggregate number of shares of Common Stock that the Holder was entitled to receive from the conversion at issue multiplied by (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions) and (B) at the option of the Holder, either reissue (if surrendered) this Debenture in a principal amount equal to the principal amount of the attempted conversion (in which case such conversion shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued if the Company had timely complied with its delivery requirements

under Section 4(c)(ii). For example, if the Holder purchases Common Stock having a total purchase price of $11,000 to cover a Buy-In with respect to an attempted conversion of this Debenture with respect to which the actual sale price of the Conversion Shares (including any brokerage commissions) giving rise to such purchase obligation was a total of $10,000 under clause (A) of the immediately preceding sentence, the Company shall be required to pay the Holder $1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver Conversion Shares upon conversion of this Debenture as required pursuant to the terms hereof.

Reservation of Shares Issuable Upon Conversion. The Company covenants that it will at all times reserve and keep available out of its authorized and unissued shares of Common Stock for the sole purpose of issuance upon conversion of this Debenture and payment of interest on this Debenture, each as herein provided, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holder (and the other holders of the Debentures), not less than such aggregate number of shares of the Common Stock as shall (subject to the terms and conditions set forth in the Purchase Agreement) be issuable (taking into account the adjustments and restrictions of Section 5) upon the conversion of the then outstanding principal amount of this Debenture and payment of interest hereunder. The Company covenants that all shares of Common Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid and nonassessable and, if the Registration Statement is then effective under the Securities Act, shall be registered for public resale in accordance with such Registration Statement (subject to such Holder's compliance with its obligations under the Registration Rights Agreement).

Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the conversion of this Debenture. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such conversion, the Company shall at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Conversion Price or round up to the next whole share.

Transfer Taxes and Expenses. The issuance of Conversion Shares on conversion of this Debenture shall be made without charge to the Holder hereof for any documentary stamp or similar taxes that may be payable in respect of the issue or delivery of such Conversion Shares, provided that the Company shall not be required to pay any tax that may be payable in respect of any transfer

involved in the issuance and delivery of any such Conversion Shares upon conversion in a name other than that of the Holder of this Debenture so converted and the Company shall not be required to issue or deliver such Conversion Shares unless or until the Person or Persons requesting the issuance thereof shall have paid to the Company the amount of such tax or shall have established to the satisfaction of the Company that such tax has been paid. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Conversion and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Conversion Shares.

d) Holder's Conversion Limitations. The Company shall not effect any conversion of this Debenture, and a Holder shall not have the right to convert any portion of this Debenture, to the extent that after giving effect to the conversion set forth on the applicable Notice of Conversion, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")) would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon conversion of this Debenture with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which are issuable upon (i) conversion of the remaining, unconverted principal amount of this Debenture beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company subject to a limitation on conversion or exercise analogous to the limitation contained herein (including, without limitation, any other Debentures) beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 4(d), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. To the extent that the limitation contained in this Section 4(d) applies, the determination of whether this Debenture is convertible (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which principal amount of this Debenture is convertible shall be in the sole discretion of the Holder, and the submission of a Notice of Conversion shall be deemed to be the Holder's determination of whether this Debenture may be converted (in relation to other securities owned by the Holder together with any Affiliates or Attribution Parties) and which principal amount of this Debenture is convertible, in each case subject to the Beneficial Ownership Limitation. To ensure compliance with this restriction, the Holder will be deemed to represent to the Company each time it delivers a Notice of Conversion that such Notice of Conversion has not violated the restrictions set forth in this paragraph and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the

Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 4(d), in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as stated in the most recent of the following: (i) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (ii) a more recent public announcement by the Company, or (iii) a more recent written notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Debenture, by the Holder or its Affiliates since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon conversion of this Debenture held by the Holder. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation, provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon conversion of this Debenture held by the Holder and the Beneficial Ownership Limitation provisions of this Section 4(d) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such notice is delivered to the Company. The Beneficial Ownership Limitation provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 4(d) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation contained herein or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Debenture.

Certain Adjustments.

(a) Stock Dividends and Stock Splits. If the Company, at any time while this Debenture is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock on shares of Common Stock or any Common Stock Equivalents (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon conversion of the Debentures), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of a reverse stock split) outstanding shares of Common Stock into a smaller number of shares or (iv) issues, in the event of a reclassification of shares of the Common Stock, any shares of capital stock of the Company, then the Conversion Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding any treasury shares of the Company)

outstanding immediately before such event, and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to this Section shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

(b) [RESERVED]

(c) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 5(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then upon any subsequent conversion of this Debenture, the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of this Debenture (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation); provided further, that if it is impractical to provide the benefit of the Purchase Rights because of the nature of the Purchase Right, then upon any subsequent conversion the Company will provide a substantially equivalent economic benefit to the Holder, measured as of the time of the grant, issuance or sale of the Purchase Right.

(d) Pro Rata Distributions. During such time as this Debenture is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Debenture, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete conversion of this Debenture (without regard to any limitations on conversion hereof, including without limitation, the Beneficial Ownership Limitation)

immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

Fundamental Transaction. If, at any time while this Debenture is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person in which, after giving effect to such transaction, the stockholders of the Company immediately prior to such transaction own less than 50% of the aggregate voting power of the Company or the successor entity of such transaction, (ii) the Company (and all of its Subsidiaries, taken as a whole), directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), then, upon any subsequent conversion of this Debenture, the Holder shall have the right to receive, for each Conversion Share that would have been issuable upon such conversion immediately prior to the occurrence of such Fundamental Transaction (without regard to any limitation in Section 4(d) on the conversion of this Debenture), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Debenture is convertible immediately prior to such Fundamental Transaction (without regard to any limitation in

Section 4(d) on the conversion of this Debenture). For purposes of any such conversion, the determination of the Conversion Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one (1) share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Conversion Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any conversion of this Debenture following such Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Debenture and the other Transaction Documents (as defined in the Purchase Agreement) in accordance with the provisions of this Section 5(e) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the holder of this Debenture, deliver to the Holder in exchange for this Debenture a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Debenture which is convertible for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon conversion of this Debenture (without regard to any limitations on the conversion of this Debenture) prior to such Fundamental Transaction, and with a conversion price which applies the conversion price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such conversion price being for the purpose of protecting the economic value of this Debenture immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Debenture and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Debenture and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

Calculations. (f) All calculations under this Section 5 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 5, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding any treasury shares of the Company) issued and outstanding.

Notice to the Holder.

(i) Adjustment to Conversion Price. Whenever the Conversion Price is adjusted pursuant to any provision of this Section 5, the Company shall promptly deliver to each Holder a notice setting forth the Conversion Price after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

(ii) Notice to Allow Conversion by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (and all of its Subsidiaries, taken as a whole) is a party, any sale or transfer of all or substantially all of the assets of the Company, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be filed at each office or agency maintained for the purpose of conversion of this Debenture, and shall cause to be delivered to the Holder at its last address as it shall appear upon the Debenture Register, at least twenty (20) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange, provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. The Holder shall remain entitled to convert this Debenture during the 20-day period commencing on the date of such notice through the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

Redemption. Section 6.

a) Optional Redemption at Election of Company. Subject to the provisions of this Section 6(a), at any time, the Company may deliver a notice to the Holder (an "Optional Redemption Notice" and the date such notice is deemed delivered hereunder, the "Optional Redemption Notice Date") of its irrevocable election to redeem some or all of the then outstanding principal amount of this Debenture for cash in an amount equal to the Optional Redemption Amount on the 10th Trading Day following the Optional Redemption Notice Date (such date, the "Optional Redemption Date", such 10 Trading Day period, the "Optional Redemption Period" and such redemption, the "Optional Redemption"); *provided* that the Company's Optional Redemption Notice may state that such notice is conditioned upon (x) a transaction in connection with the refinancing in full of the obligations under the Debentures, or (y) a transaction resulting in a Change of Control Transaction, in each case, to the extent such transaction is not consummated, in which case such Optional Redemption Notice may be revoked by the Company. The Optional Redemption Amount is payable in full on the Optional Redemption Date. The Company may only effect an Optional Redemption if the Equity Condition shall have been met (unless waived in writing by the Holder) on each Trading Day during the period commencing on the Optional Redemption Notice Date through to the Optional Redemption Date and through and including the date payment of the Optional Redemption Amount is actually made in full. If the Equity Condition shall cease to be satisfied at any time during the Optional Redemption Period, then the Holder may elect to nullify the Optional Redemption Notice by notice to the Company within 3 Trading Days after the first day on which any the Equity Condition has not been met (provided that if, by a provision of the Transaction Documents, the Company is obligated to notify the Holder of the non-existence of the Equity Condition, such notice period shall be extended to the third Trading Day after proper notice from the Company) in which case the Optional Redemption Notice shall be null and void, ab initio. The Company covenants and agrees that it will honor all Notices of Conversion tendered from the time of delivery of the Optional Redemption Notice through the date all amounts owing thereon are due and paid in full. The Company's determination to pay an Optional Redemption in cash shall be applied ratably to all of the holders of the then outstanding Debentures based on their (or their predecessor's) initial purchases of Debentures pursuant to the Purchase Agreement.

b) Mandatory Redemption. If the Company or any Guarantor Subsidiary thereof, as applicable, at any time while this Debenture is outstanding, shall sell, enter into an agreement to sell or grant any option to purchase, or sell or grant any right to reprice, or otherwise dispose of or issue (or announce any offer, sale, grant or any option to purchase or other disposition) any Common Stock or Common Stock Equivalents (other than (i) pursuant to the Transaction Documents, (ii) pursuant to the exercise of options, rights or warrants, (iii) pursuant to the conversion of any debt securities to equity or the conversion of any class of equity securities to any other class of equity securities, (iv) any issuance of options, rights or warrants relating to its Common Stock or Common Stock Equivalents, (v) pursuant to the exercise of, any Common Stock or Common Stock Equivalents, restricted stock, stock appreciation rights, restricted stock units, options or

warrants solely with respect to any directors, officers or employees of the Company or its Subsidiaries, (vi) as consideration for any acquisition, joint venture, licensing arrangement or other strategic transaction other than a capital raising transaction, (vii) as dividends or distributions on existing Common Stock or Common Stock Equivalents, (viii) pursuant to employee and/or director stock plans or employee and/or director compensation plans, and (ix) the first $6 million after the date hereof in the aggregate pursuant to the Company's existing at-the-market offering through Jefferies LLC or equity line of credit with Keystone Capital Partners, LLC ("Mandatory Redemption Financing"), then the Holder shall have the right ("Mandatory Redemption Right") to cause the Company to redeem the principal and interest, if any, on this Debenture subject to the Mandatory Redemption Cap, out of the Net Cash Proceeds of each Mandatory Redemption Financing at a redemption price equal to the sum of (i) 100% of all principal on this Debenture *plus* (ii) the amount of accrued but unpaid interest on this Debenture. Such payment shall be made within three (3) Business Days of receipt of the Net Cash Proceeds in respect of such Mandatory Redemption Financing (each such date, a "Mandatory Redemption Date"). At least two (2) Trading Days prior to the Mandatory Redemption Date the Company shall notify the Holder of the Mandatory Redemption Financing and the applicable Mandatory Redemption Date. On or before 11 p.m. ET on the Trading Day immediately prior to the Mandatory Redemption Date, the Holder shall notify the Company of whether it elects to exercise the Mandatory Redemption Right as to such Mandatory Redemption Financing and the amount that it elects to have redeemed subject to the Mandatory Redemption Cap (the "Mandatory Redemption Amount"). As to any Mandatory Redemption, the Mandatory Redemption Amount may be up to an amount or such lesser amount (at Holder's election) equal to the Holder's pro-rata portion of 20% of the Net Cash Proceeds raised thereunder (the "Mandatory Redemption Cap"). The Holder's pro-rata portion shall be determined ratably to all of the holders of the then outstanding Debentures based on their (or their predecessor's) initial purchases of Debentures pursuant to the Purchase Agreement.

c) Redemption Procedure. The payment of cash or issuance of Common Stock, as applicable, pursuant to an Optional Redemption or Mandatory Redemption or shall be payable on the Optional Redemption Date or Mandatory Redemption Date, as applicable. If any portion of the payment pursuant to an Optional Redemption or Mandatory Redemption shall not be paid by the Company by the applicable due date, interest shall accrue thereon at an interest rate equal to the lesser of 10% per annum or the maximum rate permitted by applicable law until such amount is paid in full. Notwithstanding anything herein contained to the contrary, if any portion of the Optional Redemption Amount remains unpaid after such date, the Holder may elect, by written notice to the Company given at any time thereafter, to invalidate such Optional Redemption, ab initio, and, with respect to the Company's failure to honor the Optional Redemption, the Company shall have no further right to exercise such Optional Redemption. Notwithstanding anything to the contrary in this Section 6, the Company's determination to redeem in cash or its elections under Section 6 shall be applied ratably among the Holders of Debentures. The Holder may elect to convert the outstanding

principal amount of the Debenture pursuant to Section 4 prior to actual payment in cash for any redemption under this Section 6 by the delivery of a Notice of Conversion to the Company.

Section 7. Negative Covenants. As long as any principal amount of this Debenture remains outstanding, unless the holders of at least a majority in principal amount of the then outstanding Debentures shall have otherwise given prior written consent, the Company shall not, and shall not permit any of the Subsidiaries to, directly or indirectly:

a) other than Permitted Indebtedness, enter into, create, incur, assume, guarantee or suffer to exist any indebtedness for borrowed money of any kind, including, but not limited to, a guarantee of any indebtedness for borrowed money of another person;

b) other than Permitted Liens, enter into, create, incur, assume or suffer to exist any Liens of any kind, on or with respect to any of its property or assets now owned or hereafter acquired or any interest therein or any income or profits therefrom;

c) amend its charter documents, including, without limitation, its certificate of incorporation and bylaws, in any manner that materially and adversely affects any rights of the Holder;

d) repay, repurchase or offer to repay, repurchase or otherwise acquire more than a de minimis number of shares of its Common Stock or Common Stock Equivalents other than as to (i) the Conversion Shares as permitted or required under the Transaction Documents, (ii) repurchases of Common Stock or Common Stock Equivalents of officers, directors and employees of the Company or any of its Subsidiaries, provided that such repurchases shall not exceed an aggregate of $500,000 for all officers, directors and employees during the term of this Debenture, (iii) distributions payable solely in Common Stock or Common Stock Equivalents (including in connection with the conversion of any securities of the Company), (iv) (x) cashless repurchases of Common Stock or Common Stock Equivalents deemed to occur upon exercise of stock options or warrants of such Common Stock or Common Stock Equivalents to represent a portion of the exercise price of such options or warrants, and (y) acquisitions (or withholdings) of its Common Stock or Common Stock Equivalents pursuant to any employee stock option or similar plan in satisfaction of withholding or similar taxes payable by any present or former officer, employee, director or member of management and making deemed repurchases in connection with the exercise of stock options, (v) payments of cash in lieu of fractional shares of Common Stock or Common Stock Equivalents arising out of stock dividends, splits or combinations or in connection with exercises or conversions of options, warrants and other convertible securities and (vi) the Company and each Subsidiary may repay, repurchase or offer to repay, repurchase or otherwise acquire any of Common Stock Equivalents of a Subsidiary held by the Company, another Subsidiary or another Person;

repay, repurchase or offer to repay, repurchase or otherwise acquire any Indebtedness, other than (i) the Debentures pursuant to the terms thereof, (ii) intercompany Indebtedness, (iii) Indebtedness in respect of obligations relating to corporate credit cards, purchase cards or bank card products, (iv) regularly scheduled principal and interest payments of Permitted Indebtedness, provided that such payments shall not be permitted if, at such time, or after giving effect to such payment, any Event of Default exist or has occurred and is continuing, (v) in connection with refinancings of Indebtedness and (vi) pursuant to mandatory prepayments under capital leases and purchase-money Indebtedness resulting from non-default events, including, asset sales and casualty and condemnation events;

(f) pay cash dividends or cash distributions on any equity securities of the Company other than payments of cash in lieu of fractional shares of equity securities arising out of stock dividends, splits or combinations in connection with exercises or conversions of options, warrants and other convertible securities;

(g) enter into any transaction with any Affiliate of the Company which would be required to be disclosed in any public filing with the Commission after the date hereof, unless such transaction is expressly approved by a majority of the disinterested directors of the Company (even if less than a quorum otherwise required for board approval); or

(h) transfer, license, sell or otherwise dispose of any of its business or assets, except for (i) Permitted Licenses, (ii) sales or abandonment of obsolete, worn-out or surplus items, equipment or other tangible personal property or other equipment or tangible personal property that is no longer used or useful in the business of the Company and its Subsidiaries (as determined by the Company in its reasonable business judgment), (iii) the expiration, forfeiture, invalidation, cancellation or abandonment in the ordinary course of business of non-material Intellectual Property that is no longer useful to the business of the Company and its Subsidiaries (as determined by the Company in its reasonable business judgment), (iv) sales, transfers, licenses or dispositions of inventory in the ordinary course of business, (v) sales, transfers, licenses or dispositions among the Company and its Subsidiaries, (vi) sales, forgiveness or discounting in the ordinary course of business of past due and delinquent accounts, (vii) to the extent constituting a transfer, the granting of Permitted Liens, (viii) to the extent constituting a transfer, the use of cash or cash equivalents to make investments not otherwise prohibited by the Transaction Documents, (ix) to the extent constituting a transfer, payments of cash and cash equivalents in the ordinary course of business in connection with transactions not otherwise prohibited by the Transaction Documents (x) licenses, sublicenses, leases or subleases (other than relating to Intellectual Property) granted to third parties in the ordinary course of business and not interfering with the business of the Company and its Subsidiaries, (xi) any loss of, damage to or destruction of, or any condemnation or other taking for public use of, any property of the Company and its Subsidiaries, (xii) dispositions consisting of the sale, transfer, assignment or other disposition of unpaid and

overdue accounts receivable in connection with the collection, compromise or settlement thereof in the ordinary course of business and not as part of a financing transaction (xiii) any disposition or other transfer of any Product, without the payment or provision of consideration to the Company or any of its Subsidiaries for such Product (other than expense reimbursement), reasonably necessary for the conduct of any then on-going clinical trial or other development or regulatory activities associated with such Product, (xiv) any disposition or other transfer of any Product as promotional support in the ordinary course of business or in consideration of services in the ordinary course of business and (xv) so long as no Event of Default has occurred and is continuing, other transfers licenses, sales, or dispositions of tangible personal property in the ordinary course of business with a fair market value not to exceed $250,000 in the aggregate.

"Event of Default" means, wherever used herein, any of the following events (whatever the reason for such event and whether such event shall be voluntary or involuntary or effected by operation of law or pursuant to any judgment, decree or order of any court, or any order, rule or regulation of any administrative or governmental body):

i. any default in the payment of (A) the principal amount of any Debenture or (B) interest, liquidated damages and other amounts owing to a Holder on any Debenture, as and when the same shall become due and payable (whether on a Conversion Date or the Maturity Date or by acceleration or otherwise) which default, solely in the case of an interest payment or other default under clause (B) above, is not cured within three (3) Trading Days;

ii. the Company shall fail to observe or perform any other covenant or agreement contained in this Debenture (other than a breach by the Company of its obligations to deliver shares of Common Stock to the Holder upon conversion, which breach is addressed in clause (xi) below) or in any Transaction Document, which failure is not cured, if possible to cure, within the earlier to occur of (A) fifteen (15) Trading Days after written notice of such failure sent by the Holder or by any other Holder to the Company and (B) twenty (20) Trading Days after an officer of the Company has become aware of such failure;

iii. [reserved];

iv. any representation or warranty made in this Debenture, any other Transaction Documents, any written statement pursuant hereto or thereto or any other report, financial statement or certificate made or delivered to the Holder or any other Holder pursuant to the Transaction Documents shall be untrue or incorrect in any material respect as of the date when made or deemed made;

v. the Company or any Significant Subsidiary (as such term is defined in Rule 1-02(w) of Regulation S-X) shall be subject to a Bankruptcy Event;

vi. the Company or any Significant Subsidiary shall default (subject to any grace or cure period provided in the applicable agreement, document, or instrument) on any of its obligations under any mortgage, credit agreement or other facility, indenture agreement, factoring agreement or other instrument under which there may be issued, or by which there may be secured or evidenced, any indebtedness for borrowed money or money due under any long term leasing or factoring arrangement that (a) involves an obligation greater than $250,000, whether such indebtedness now exists or shall hereafter be created, and (b) results in such indebtedness becoming or being declared due and payable prior to the date on which it would otherwise become due and payable;

vii. the Company (and all of its Subsidiaries, taken as a whole) shall consummate any Change of Control Transaction; or

viii. any monetary judgment, writ or similar final process shall be entered or filed against the Company, any Subsidiary or any of their respective property or other assets for more than $250,000 (excluding any amounts covered by insurance), and such judgment, writ or similar final process shall remain unpaid, unvacated, unbonded or unstayed for a period of 60 calendar days.

(b) Remedies Upon Event of Default. If any Event of Default occurs, the outstanding principal amount of this Debenture, plus accrued but unpaid interest, liquidated damages and other amounts owing in respect thereof through the date of acceleration, shall become, at the election of the holders of at least a majority in principal amount of the then outstanding Debentures, immediately due and payable in cash at the Mandatory Default Amount. Commencing 5 Business Days after the occurrence of any Event of Default that results in the eventual acceleration of this Debenture, the interest rate on this Debenture shall accrue at an interest rate equal to the lesser of 10% per annum or the maximum rate permitted under applicable law. Upon the payment in full of the Mandatory Default Amount (other than contingent indemnification obligations for which no claim has been asserted) under this Debenture, the Holder shall promptly surrender this Debenture to or as directed by the Company. In connection with such acceleration described herein, the Holder need not provide, and the Company hereby waives, any presentment, demand, protest or other notice of any kind, and the Holder may immediately and without expiration of any grace period enforce any and all of its rights and remedies hereunder and all other remedies available to it under applicable law. Such acceleration may be rescinded and annulled by Holder at any time prior to payment hereunder and the Holder shall have all rights as a holder of the Debenture until such time, if any, as the Holder receives full payment pursuant to this Section 8(b). No such

rescission or annulment shall affect any subsequent Event of Default or impair any right consequent thereon.

(a) Notices. Any and all notices or other communications or deliveries to be provided by the Holder hereunder, including, without limitation, any Notice of Conversion, shall be in writing and delivered personally, by facsimile, by email attachment, or sent by a nationally recognized overnight courier service, addressed to the Company, at the address set forth above, or such other facsimile number, email address, or address as the Company may specify for such purposes by notice to the Holder delivered in accordance with this Section 9(a). Any and all notices or other communications or deliveries to be provided by the Company hereunder shall be in writing and delivered personally, by facsimile, by email attachment, or sent by a nationally recognized overnight courier service addressed to each Holder at the facsimile number, email address or address of the Holder appearing on the books of the Company, or if no such facsimile number or email attachment or address appears on the books of the Company, at the principal place of business of such Holder, as set forth in the Purchase Agreement. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number or email attachment to the email address set forth on the signature pages attached hereto prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number or email attachment to the email address set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (iv) upon actual receipt by the party to whom such notice is required to be given.

(b) Absolute Obligation. Except as expressly provided herein, no provision of this Debenture shall alter or impair the obligation of the Company, which is absolute and unconditional, to pay the principal of, liquidated damages and accrued interest, as applicable, on this Debenture at the time, place, and rate, and in the coin or currency, herein prescribed. This Debenture is a direct debt obligation of the Company. This Debenture ranks pari passu with all other Debentures now or hereafter issued under the terms set forth herein.

(c) Lost or Mutilated Debenture. If this Debenture shall be mutilated, lost, stolen or destroyed, the Company shall execute and deliver, in exchange and substitution for and upon cancellation of a mutilated Debenture, or in lieu of or in substitution for a lost, stolen or destroyed Debenture, a new Debenture for the principal amount of this Debenture so mutilated, lost, stolen or destroyed, but only upon receipt of evidence of such loss, theft or destruction of such Debenture, and of the ownership hereof, reasonably

satisfactory to the Company. The applicant for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

(d) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Debenture shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflict of laws thereof. Each party agrees that all legal proceedings concerning the interpretation, enforcement and defense of the transactions contemplated by any of the Transaction Documents (whether brought against a party hereto or its respective Affiliates, directors, officers, shareholders, employees or agents) shall be commenced in the state and federal courts sitting in the City of New York, Borough of Manhattan (the "New York Courts"). Each party hereto hereby irrevocably submits to the exclusive jurisdiction of the New York Courts for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of such New York Courts, or such New York Courts are improper or inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Debenture and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by applicable law. Each party hereto hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Debenture or the transactions contemplated hereby.

(e) Waiver. Any waiver by the Company or the Holder of a breach of any provision of this Debenture shall not operate as or be construed to be a waiver of any other breach of such provision or of any breach of any other provision of this Debenture. The failure of the Company or the Holder to insist upon strict adherence to any term of this Debenture on one or more occasions shall not be considered a waiver or deprive that party of the right thereafter to insist upon strict adherence to that term or any other term of this Debenture on any other occasion. Any waiver by the Company or the Holder must be in writing.

(f) Severability. If any provision of this Debenture is invalid, illegal or unenforceable, the balance of this Debenture shall remain in effect, and if any provision is inapplicable to any Person or circumstance, it shall nevertheless remain applicable to all other Persons and circumstances. If it shall be found that any interest or other amount deemed interest due hereunder violates the applicable law governing usury, the applicable

rate of interest due hereunder shall automatically be lowered to equal the maximum rate of interest permitted under applicable law. The Company covenants (to the extent that it may lawfully do so) that it shall not at any time insist upon, plead, or in any manner whatsoever claim or take the benefit or advantage of, any stay, extension or usury law or other law which would prohibit or forgive the Company from paying all or any portion of the principal of or interest on this Debenture as contemplated herein, wherever enacted, now or at any time hereafter in force, or which may affect the covenants or the performance of this Debenture, and the Company (to the extent it may lawfully do so) hereby expressly waives all benefits or advantage of any such law, and covenants that it will not, by resort to any such law, hinder, delay or impede the execution of any power herein granted to the Holder, but will suffer and permit the execution of every such as though no such law has been enacted.

(g) Remedies, Characterizations, Other Obligations, Breaches and Injunctive Relief. The remedies provided in this Debenture shall be cumulative and in addition to all other remedies available under this Debenture and any of the other Transaction Documents at law or in equity (including a decree of specific performance and/or other injunctive relief), and nothing herein shall limit the Holder's right to pursue actual and consequential damages for any failure by the Company to comply with the terms of this Debenture. The Company covenants to the Holder that there shall be no characterization concerning this instrument other than as expressly provided herein. Amounts set forth or provided for herein with respect to payments, conversion and the like (and the computation thereof) shall be the amounts to be received by the Holder and shall not, except as expressly provided herein, be subject to any other obligation of the Company (or the performance thereof). The Company acknowledges that a breach by it of its obligations hereunder will cause irreparable harm to the Holder and that the remedy at law for any such breach may be inadequate. The Company therefore agrees that, in the event of any such breach or threatened breach, the Holder shall be entitled, in addition to all other available remedies, to an injunction restraining any such breach or any such threatened breach, without the necessity of showing economic loss and without any bond or other security being required. The Company shall provide all information and documentation to the Holder that is reasonably requested by the Holder to enable the Holder to confirm the Company's compliance with the terms and conditions of this Debenture.

(h) Next Business Day. Whenever any payment or other obligation hereunder shall be due on a day other than a Business Day, such payment shall be made on the next succeeding Business Day.

(i) Headings. The headings contained herein are for convenience only, do not constitute a part of this Debenture and shall not be deemed to limit or affect any of the provisions hereof.

(g) Secured Obligation. The obligations of the Company under this Debenture are secured by the Collateral (as defined in the Security Agreement) pledged by the Company and each Subsidiary Guarantor pursuant to the Security Agreement, dated as of July 31, 2020 between the Company, the Subsidiary Guarantors party thereto from time to time and the Secured Parties (as defined therein).

Section 10. Disclosure. Upon receipt or delivery by the Company of any notice in accordance with the terms of this Debenture, if the Company has determined that the matters relating to such notice constitute material, nonpublic information relating to the Company or its Subsidiaries, the Company shall publicly disclose such material, nonpublic information on a Current Report on Form 8-K or otherwise in accordance with applicable securities laws. In the event that the Company believes that a notice contains material, non-public information relating to the Company or its Subsidiaries, the Company so shall indicate to the Holder contemporaneously with delivery of such notice.

****

(Signature Page Follows)

IN WITNESS WHEREOF, the Company has caused this Debenture to be duly executed by a duly authorized officer as of the date first above indicated.

VACCINEX, INC.

By:/s/ Scott E. Royer
Name: Scott E. Royer
Title: Chief Financial Officer

Address for Notice:
1895 Mount Hope Ave.
Rochester, NY 14620
Email: mzauderer@vaccinex.com

With a copy to (which shall not constitute notice):

Hogan Lovells US LLP
100 International Drive
Suite 2000
Baltimore, Maryland 21202
Attn: William Intner
william.intner@hoganlovells.com

ANNEX A

NOTICE OF CONVERSION

The undersigned hereby elects to convert principal under the 7% Original Issue Discount Senior Secured Convertible Debenture due August 3, 2021 of Vaccinex, Inc., a Delaware corporation (the "Company"), into shares of common stock (the "Common Stock"), of the Company according to the conditions hereof, as of the date written below. If shares of Common Stock are to be issued in the name of a person other than the undersigned, the undersigned will pay all transfer taxes payable with respect thereto and is delivering herewith such certificates and opinions as reasonably requested by the Company in accordance therewith. No fee will be charged to the holder for any conversion, except for such transfer taxes, if any.

By the delivery of this Notice of Conversion the undersigned represents and warrants to the Company that its ownership of the Common Stock does not exceed the amounts specified under Section 4 of this Debenture, as determined in accordance with Section 13(d) of the Exchange Act.

The undersigned agrees to comply with the prospectus delivery requirements under the applicable securities laws in connection with any transfer of the aforesaid shares of Common Stock.

Conversion calculations:

Date to Effect Conversion:

Principal Amount of Debenture to be Converted:

Payment of Interest in Common Stock
$_____ of Interest Accrued on Account of Conversion at Issue.

Number of shares of Common Stock to be issued:

Signature:

Name:

Address for Delivery of Common Stock Certificates:

Or

DWAC Instructions:

Broker No:
Account No:

Schedule 1

CONVERSION SCHEDULE

The 7% Original Issue Discount Senior Secured Convertible Debentures due on August 3, 2021 in the aggregate principal amount of $8,640,000 are issued by Vaccinex, Inc., a Delaware corporation. This Conversion Schedule reflects conversions made under Section 4 of the above referenced Debenture.

Dated:

Date of Conversion (or for first entry, Original Issue Date)	Amount of Conversion	Aggregate Principal Amount Remaining Subsequent to Conversion (or original Principal Amount)	Company Attest

Exhibit 10.5

REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (this "Agreement") is made and entered into as of August 3, 2020, between Vaccinex, Inc., a Delaware corporation (the "Company"), and each of the several purchasers signatory hereto (each such purchaser, a "Purchaser" and, collectively, the "Purchasers").

This Agreement is made pursuant to the Securities Purchase Agreement, dated as of July 30, 2020, between the Company and each Purchaser (the "Purchase Agreement").

The Company and each Purchaser hereby agrees as follows:

1. Definitions.

Capitalized terms used and not otherwise defined herein that are defined in the Purchase Agreement shall have the meanings given such terms in the Purchase Agreement. As used in this Agreement, the following terms shall have the following meanings:

"Advice" shall have the meaning set forth in Section 6(c).

"Effectiveness Date" means, with respect to the Initial Registration Statement required to be filed hereunder, the 60th calendar day following the date hereof (or, in the event of a "full review" by the Commission, the 105th calendar day following the date hereof) and with respect to any additional Registration Statements which may be required pursuant to Section 2(c) or Section 3(c), the 60th calendar day following the date on which an additional Registration Statement is required to be filed hereunder (or, in the event of a "full review" by the Commission, the 105th calendar day following the date such additional Registration Statement is required to be filed hereunder); provided, however, that in the event the Company is notified by the Commission that one or more of the above Registration Statements will not be reviewed or is no longer subject to further review and comments, the Effectiveness Date as to such Registration Statement shall be the fifth Trading Day following the date on which the Company is so notified if such date precedes the dates otherwise required above, provided, further, if such Effectiveness Date falls on a day that is not a Trading Day, then the Effectiveness Date shall be the next succeeding Trading Day.

"Effectiveness Period" shall have the meaning set forth in Section 2(a).

"Event" shall have the meaning set forth in Section 2(d).

"Event Date" shall have the meaning set forth in Section 2(d).

"Filing Date" means, with respect to the Initial Registration Statement required hereunder, the 30th calendar day following the date hereof and, with

respect to any additional Registration Statements which may be required pursuant to Section 2(c) or Section 3(c), the earliest practical date on which the Company is permitted by SEC Guidance to file such additional Registration Statement related to the Registrable Securities.

"Holder" or "Holders" means the holder or holders, as the case may be, from time to time of Registrable Securities.

"Indemnified Party" shall have the meaning set forth in Section 5(c).

"Indemnifying Party" shall have the meaning set forth in Section 5(c).

"Initial Registration Statement" means the initial Registration Statement filed pursuant to this Agreement.

"Losses" shall have the meaning set forth in Section 5(a).

"Plan of Distribution" shall have the meaning set forth in Section 2(a).

"Prospectus" means the prospectus included in a Registration Statement (including, without limitation, a prospectus that includes any information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430A promulgated by the Commission pursuant to the Securities Act), as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by a Registration Statement, and all other amendments and supplements to the Prospectus, including post-effective amendments, and all material incorporated by reference or deemed to be incorporated by reference in such Prospectus.

"Registrable Securities" means, as of any date of determination, (a) all shares of Common Stock then issued and issuable upon conversion in full of the Debentures (assuming on such date the Debentures are converted in full without regard to any conversion limitations therein) and (b) any securities issued or then issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect to the foregoing; provided, however, that any such Registrable Securities shall cease to be Registrable Securities (and the Company shall not be required to maintain the effectiveness of any, or file another, Registration Statement hereunder with respect thereto) upon such time as (a) a Registration Statement with respect to the sale of such Registrable Securities is declared effective by the Commission under the Securities Act and such Registrable Securities have been disposed of by the Holder in accordance with such effective Registration Statement, (b) such Registrable Securities have been previously sold in accordance with Rule 144, or (c) such securities become eligible for resale without volume or manner-of-sale restrictions and without current public information pursuant to Rule 144 as set forth in a written opinion letter to such

effect, addressed, delivered and acceptable to the Transfer Agent and the affected Holders.

"Registration Statement" means any registration statement required to be filed hereunder pursuant to Section 2(a) and any additional registration statements contemplated by Section 2(c) or Section 3(c), including (in each case) the Prospectus, amendments and supplements to any such registration statement or Prospectus, including pre- and post-effective amendments, all exhibits thereto, and all material incorporated by reference or deemed to be incorporated by reference in any such registration statement.

"Rule 415" means Rule 415 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

"Rule 424" means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

"Selling Stockholder Questionnaire" shall have the meaning set forth in Section 3(a).

"SEC Guidance" means (i) any publicly-available written or oral guidance of the Commission staff, or any comments, requirements or requests of the Commission staff and (ii) the Securities Act.

2. Shelf Registration.

(a) On or prior to each Filing Date, the Company shall prepare and file with the Commission a Registration Statement covering the resale of all of the Registrable Securities that are not then registered on an effective Registration Statement for an offering to be made on a continuous basis pursuant to Rule 415. Each Registration Statement filed hereunder shall be on Form S-3 (except if the Company is not then eligible to register for resale the Registrable Securities on Form S-3, in which case such registration shall be on another appropriate form in accordance herewith, subject to the provisions of Section 2(e)) and shall contain (unless otherwise directed by at least 85% in interest of the Holders and except if otherwise required pursuant to written comments received from the Commission upon a review of such Registration Statement) substantially the "Plan of Distribution" attached hereto as Annex A and substantially the "Selling Stockholders" section attached hereto as Annex B; provided, however, that no Holder shall be required to be named as an "underwriter" without such Holder's express prior written consent. Subject to the terms of this Agreement, the Company shall use commercially reasonable efforts to cause a Registration Statement filed

under this Agreement (including, without limitation, under Section 3(c)) to be declared effective under the Securities Act as promptly as reasonably practicable after the filing thereof, but in any event no later than the applicable Effectiveness Date, and shall use its commercially reasonable efforts to keep such Registration Statement continuously effective under the Securities Act from the Effectiveness Date until the date that all Registrable Securities covered by such Registration Statement (i) have been sold thereunder or pursuant to Rule 144 or (ii) may be sold without volume or manner-of-sale restrictions pursuant to Rule 144 and without the requirement for the Company to be in compliance with the current public information requirement under Rule 144, as determined by the counsel to the Company pursuant to a written opinion letter to such effect, addressed and acceptable to the Transfer Agent and the affected Holders (the "Effectiveness Period"). The Company shall telephonically request effectiveness of a Registration Statement by no later than 5:00 p.m. (New York City time) on a Trading Day. The Company shall promptly notify the Holders via facsimile or by e-mail of the effectiveness of a Registration Statement on the same Trading Day that the Company telephonically confirms effectiveness with the Commission, which shall be the date requested for effectiveness of such Registration Statement. The Company shall, by 9:30 a.m. (New York City time) on the Trading Day after the effective date of such Registration Statement, file a final Prospectus with the Commission as and to the extent required by Rule 424. Failure to so notify the Holder within one (1) Trading Day of such notification of effectiveness or failure to file a final Prospectus as foresaid shall be deemed an Event under Section 2(d).

(b) Notwithstanding the registration obligations set forth in Section 2(a), if the Commission informs the Company that all of the Registrable Securities cannot, as a result of the application of Rule 415, be registered for resale as a secondary offering on a single registration statement, the Company agrees to promptly inform each of the Holders thereof and use its commercially reasonable efforts to file amendments to the Initial Registration Statement as required by the Commission, covering the maximum number of Registrable Securities permitted to be registered by the Commission, on Form S-3 or such other form available to register for resale the Registrable Securities as a secondary offering, subject to the provisions of Section 2(e); with respect to filing on Form S-3 or other appropriate form, and subject to the provisions of Section 2(d) with respect to the payment of liquidated damages; provided, however, that prior to filing such amendment, the Company shall be obligated to use diligent efforts to advocate with the Commission for the registration of all of the Registrable Securities in accordance with the SEC Guidance, including without limitation, Compliance and Disclosure Interpretation 612.09.

(c) Notwithstanding any other provision of this Agreement and subject to the payment of liquidated damages pursuant to Section 2(d), if the Commission or any SEC Guidance sets forth a limitation on the number of Registrable Securities permitted to be registered on a particular Registration Statement as a secondary offering (and notwithstanding that the Company used diligent efforts to advocate

with the Commission for the registration of all or a greater portion of Registrable Securities), unless otherwise directed in writing by a Holder as to its Registrable Securities, the number of Registrable Securities to be registered on such Registration Statement will be reduced as follows:

a. First, the Company shall reduce or eliminate any securities to be included other than Registrable Securities; and

b. Second, the Company shall reduce Registrable Securities represented by Conversion Shares (applied, in the case that some Conversion Shares may be registered, to the Holders on a pro rata basis based on the total number of unregistered Conversion Shares held by such Holders).

In the event of a cutback hereunder, the Company shall give the Holder at least five (5) Trading Days prior written notice along with the calculations as to such Holder's allotment. In the event the Commission or any SEC Guidance requires any Holder to be specifically identified as an "underwriter" in a Registration Statement and such Holder does not consent to being so named, then the Company shall use commercially reasonable efforts to persuade the Commission that the offering contemplated by such Registration Statement is a valid secondary offering and not an offering "by or on behalf of the issuer" as defined in Rule 415 and that the Holder is not an "underwriter." In the event that, despite the Company's commercially reasonable efforts, the Commission refuses to alter its position, the Company shall (i) remove from such Registration Statement such portion of the Registrable Securities and/or (ii) agree to such restrictions and limitations on the registration and resale of the Registrable Securities as the Commission may require to assure the Company's compliance with the requirements of Rule 415; provided, however, that if the Holder refuses to be named as an underwriter as required, the Holder's Registrable Securities shall be removed from the Registration Statement. In the event the Company amends the Initial Registration Statement in accordance with the foregoing, the Company will use its best efforts to file with the Commission, as promptly as allowed by Commission or SEC Guidance provided to the Company or to registrants of securities in general, one or more registration statements on Form S-3 or such other form available to register for resale those Registrable Securities that were not registered for resale on the Initial Registration Statement, as amended.

(d) If: (i) the Initial Registration Statement is not filed on or prior to its Filing Date (if the Company files the Initial Registration Statement without affording the Holders the opportunity to review and comment on the same as required by Section 3(a) herein, the Company shall be deemed to have not satisfied this clause (i)), or (ii) the Company fails to file with the Commission a request for acceleration of a Registration Statement in accordance with Rule 461 promulgated by the Commission pursuant to the Securities Act within ten (10) calendar days of the date that the Company is notified (orally or in writing, whichever is earlier) by the Commission that such Registration Statement will not be "reviewed" or will not

be subject to further review, subject to a delay of up to an additional thirty (30) calendar days while circumstances exist that would entitle the Company to an Allowed Delay with respect to suspension of the use of a Prospectus, or (iii) prior to the effective date of a Registration Statement, the Company fails to file a pre-effective amendment and otherwise respond in writing to comments made by the Commission in respect of such Registration Statement within ten (10) calendar days after the receipt of comments by or notice from the Commission that such amendment is required in order for such Registration Statement to be declared effective, subject to a delay of up to an additional thirty (30) calendar days while circumstances exist that would entitle the Company to an Allowed Delay with respect to suspension of the use of a Prospectus, or (iv) a Registration Statement registering for resale all of the Registrable Securities is not declared effective by the Commission by the Effectiveness Date of the Initial Registration Statement, or (v) after the effective date of a Registration Statement, such Registration Statement ceases for any reason to remain continuously effective as to all Registrable Securities included in such Registration Statement, or the Holders are otherwise not permitted to utilize the Prospectus therein to resell such Registrable Securities (including due to an Allowed Delay), in either case for more than thirty (30) Trading Days (which need not be consecutive calendar days) during any 12-month period (any such failure or breach being referred to as an "Event", and for purposes of clauses (i) and (iv), the date on which such Event occurs, and for purposes of clauses (ii), (iii) and (v), the date on which the applicable time period is exceeded being referred to as "Event Date"), then, in addition to any other rights the Holders may have hereunder or under applicable law, on each such Event Date and on each monthly anniversary of each such Event Date (if the applicable Event shall not have been cured by such date) until the earlier of the date that (1) the applicable Event is cured and (2) the Registrable Securities are eligible for resale pursuant to Rule 144 without manner-of-sale or volume restrictions, the Company shall pay to each Holder an amount in cash, as partial liquidated damages and not as a penalty, equal to the product of 1.0% multiplied by the aggregate Subscription Amount paid by such Holder pursuant to the Purchase Agreement multiplied by the proportion of (A) the Securities held by such Holder for which a Registration Statement has not been declared effective to (B) the total number of Securities purchased pursuant to the Purchase Agreement. The parties agree that notwithstanding anything to the contrary herein or in the Purchase Agreement, (1) no liquidated damages shall be payable with respect to any period after the expiration of the Effectiveness Period (it being understood that this sentence shall not relieve the Company of any liquidated damages accruing prior to the Effectiveness Date), (2) no liquidated damages shall accrue or be payable hereunder with respect to any day on which the high price of the Common Stock on the Trading Market on which the Common Stock is then listed or traded is less than the then-applicable Conversion Price, and (3) the maximum aggregate liquidated damages payable to the Holders under this Agreement shall be 8.0% of the aggregate Subscription Amount paid pursuant to the Purchase Agreement. If the Company fails to pay any partial liquidated damages pursuant to this Section in full within seven days after the date payable, the Company will pay interest thereon at a rate of 1.0% per month (or such lesser

maximum amount that is permitted to be paid by applicable law) to the Holder, accruing daily from the date such partial liquidated damages are due until such amounts, plus all such interest thereon, are paid in full. The partial liquidated damages pursuant to the terms hereof shall apply on a daily pro rata basis for any portion of a month prior to the cure of an Event. The Company shall not be liable for liquidated damages under this Agreement as to any Registrable Securities that are not permitted by the Commission to be included in a Registration Statement due solely to SEC Guidance from the time that it is determined that such Registrable Securities are not permitted to be registered until such time as the provisions of this Agreement as to the additional Registration Statements required to be filed hereunder are triggered, in which case the provisions of this Section 2(d) shall once again apply, if applicable. In such case, the liquidated damages shall be calculated to only apply to the percentage of Registrable Securities that are permitted in accordance with SEC Guidance to be included in such Registration Statement. The Effectiveness Date for a Registration Statement shall be extended without default or liquidated damages hereunder in the event that the Company's failure to obtain the effectiveness of such Registration Statement on a timely basis results from the failure of a Holder to timely provide the Company with information requested by the Company and necessary to complete the Registration Statement in accordance with the requirements of the Securities Act (in which the Effectiveness Date would be extended with respect to Registrable Securities held by such Purchaser).

(e) If Form S-3 is not available for the registration of the resale of Registrable Securities hereunder, the Company shall (i) register the resale of the Registrable Securities on another appropriate form and (ii) undertake to register the Registrable Securities on Form S-3 as soon as such form is available, provided that the Company shall maintain the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the Commission.

(f) Notwithstanding anything to the contrary contained herein and subject to Section 2(c), in no event shall the Company be permitted to name any Holder or affiliate of a Holder as an underwriter without the prior written consent of such Holder, except that a Holder may be named as a "statutory underwriter" if such Holder is, or is affiliated with, a broker-dealer and states such fact in its Selling Stockholder Questionnaire.

(g) For not more than thirty (30) Trading Days (which need not be consecutive) in any twelve (12) month period, the Company may suspend the use of any Prospectus included in any Registration Statement contemplated by this Section 2 in the event that the Company determines in good faith that such suspension is necessary to (A) delay the disclosure of material non-public information concerning the Company, the disclosure of which at the time is not, in the good faith opinion of the Company, in the best interests of the Company or (B) amend or supplement the Registration Statement or the related Prospectus so that such Registration Statement or Prospectus shall not include an untrue statement of

a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the case of the Prospectus in light of the circumstances under which they were made, not misleading (an "Allowed Delay"); provided, that the Company shall promptly (a) notify each Holder in writing of the commencement of and the reasons for an Allowed Delay, but shall not (without the prior written consent of a Holder) disclose to such Purchaser any material non-public information giving rise to an Allowed Delay, (b) advise the Holders in writing to cease all sales under the Registration Statement until the end of the Allowed Delay and (c) use commercially reasonable efforts to terminate an Allowed Delay as promptly as practicable.

3. Registration Procedures.

In connection with the Company's registration obligations hereunder:

(a) Not less than five (5) Trading Days prior to the filing of each Registration Statement and not less than one (1) Trading Day prior to the filing of any related Prospectus or any amendment or supplement thereto (including any document that would be incorporated or deemed to be incorporated therein by reference, but not including (A) any filing under the Exchange Act or (B) any supplement or post-effective amendment that is not related to such Holder's Registrable Securities), the Company shall (i) furnish to each Holder copies of all such documents proposed to be filed, which documents (other than those incorporated or deemed to be incorporated by reference) will be subject to the review of such Holders, and (ii) cause its officers and directors, counsel and independent registered public accountants to respond to such inquiries as shall be necessary, in the reasonable opinion of respective counsel to each Holder, to conduct a reasonable investigation within the meaning of the Securities Act. The Company shall not file a Registration Statement or any such Prospectus or any amendments or supplements thereto to which the Holders of a majority of the Registrable Securities shall reasonably object in good faith, provided that, the Company is notified of such objection in writing no later than five (5) Trading Days after the Holders have been so furnished copies of a Registration Statement or one (1) Trading Day after the Holders have been so furnished copies of any related Prospectus or amendments or supplements thereto. Each Holder agrees to furnish to the Company a completed questionnaire in the form attached to this Agreement as Annex C (a "Selling Stockholder Questionnaire") on a date that is not less than two (2) Trading Days prior to the Filing Date or by the end of the fourth (4th) Trading Day following the date on which such Holder receives draft materials in accordance with this Section. Each Holder agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of each Registration Statement any amendment thereto unless the Holder has notified the Company in writing of its election to exclude all of its Registrable Securities from such Registration Statement.

(b) The Company shall (i) prepare and file with the Commission such amendments, including post-effective amendments, to a Registration Statement and the Prospectus used in connection therewith as may be necessary to keep a Registration Statement continuously effective as to the applicable Registrable Securities for the Effectiveness Period and prepare and file with the Commission such additional Registration Statements in order to register for resale under the Securities Act all of the Registrable Securities, (ii) cause the related Prospectus to be amended or supplemented by any required Prospectus supplement (subject to the terms of this Agreement), and, as so supplemented or amended, to be filed pursuant to Rule 424, (iii) respond as promptly as reasonably practicable to any comments received from the Commission with respect to a Registration Statement or any amendment thereto and provide as promptly as reasonably practicable to the Holders true and complete copies of all correspondence from and to the Commission relating to a Registration Statement (provided that, the Company shall excise any information contained therein which would constitute material non-public information regarding the Company or any of its Subsidiaries), and (iv) comply in all material respects with the applicable provisions of the Securities Act and the Exchange Act with respect to the disposition of all Registrable Securities covered by a Registration Statement during the applicable period in accordance (subject to the terms of this Agreement) with the intended methods of disposition by the Holders thereof set forth in such Registration Statement as so amended or in such Prospectus as so supplemented.

(c) If during the Effectiveness Period, the number of Registrable Securities at any time exceeds 100% of the number of shares of Common Stock then registered in a Registration Statement, then the Company shall file as soon as reasonably practicable, but in any case prior to the applicable Filing Date, an additional Registration Statement covering the resale by the Holders of not less than the number of such Registrable Securities.

(d) The Company shall notify the Holders of Registrable Securities to be sold (which notice shall, pursuant to clauses (iii) through (vi) hereof, be accompanied by an instruction to suspend the use of the Prospectus until the requisite changes have been made) as promptly as reasonably practicable (and, in the case of (i)(A) below, not less than one (1) Trading Day prior to such filing) and (if requested by any such Person) confirm such notice in writing no later than one (1) Trading Day following the day (i)(A) when a Prospectus or any Prospectus supplement or post-effective amendment to a Registration Statement is proposed to be filed (other than (1) any filing under the Exchange Act or (2) any supplement or post-effective amendment that is not related to such Holder's Registrable Securities), (B) when the Commission notifies the Company whether there will be a "review" of such Registration Statement and whenever the Commission comments in writing on such Registration Statement, and (C) with respect to a Registration Statement or any post-effective amendment, when the same has become effective, (ii) of any request by the Commission or any other federal or state governmental authority for amendments or supplements to a Registration

Statement or Prospectus or for additional information, (iii) of the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of a Registration Statement covering any or all of the Registrable Securities or the initiation of any Proceedings for that purpose, (iv) of the receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Registrable Securities for sale in any jurisdiction, or the initiation or threatening of any Proceeding for such purpose, (v) of the occurrence of any event or passage of time that makes the financial statements included in a Registration Statement ineligible for inclusion therein or any statement made in a Registration Statement or Prospectus or any document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires any revisions to a Registration Statement, Prospectus or other documents so that, in the case of a Registration Statement or the Prospectus, as the case may be, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and (vi) of the occurrence or existence of any pending corporate development with respect to the Company that the Company believes may be material and that, in the determination of the Company, makes it not in the best interest of the Company to allow continued availability of a Registration Statement or Prospectus; provided, however, that in no event shall any such notice contain any information which would constitute material, non-public information regarding the Company or any of its Subsidiaries.

(e) The Company shall use commercially reasonable efforts to avoid the issuance of, or, if issued, obtain the withdrawal of (i) any order stopping or suspending the effectiveness of a Registration Statement, or (ii) any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any jurisdiction, at the earliest practicable moment.

(f) The Company shall furnish to each Holder, without charge, at least one conformed copy of each such Registration Statement and each amendment thereto, including financial statements and schedules, all documents incorporated or deemed to be incorporated therein by reference to the extent requested by such Person, and all exhibits to the extent requested by such Person (including those previously furnished or incorporated by reference) promptly after the filing of such documents with the Commission, provided that any such item which is available on the EDGAR system (or successor thereto) need not be furnished in physical form.

(g) Subject to the terms of this Agreement, the Company hereby consents to the use of such Prospectus and each amendment or supplement thereto by each of the selling Holders in connection with the offering and sale of the Registrable Securities covered by such Prospectus and any amendment or supplement thereto, except after the giving of any notice pursuant to Section 3(d) or during any period provided by Section 2(g). Each Holder agrees that, upon

receipt of any notice from the Company of either (i) the commencement of an Allowed Delay pursuant to Section 2(g) or (ii) the happening of an event pursuant to Sections 3(d)(iii), 3(d)(v) or 3(d)(vi) hereof, such Holder will immediately discontinue disposition of Registrable Securities pursuant to the Registration Statement covering such Registrable Securities, until the Holder is advised by the Company that such dispositions may again be made. Notwithstanding anything to the contrary in this Section 2(g), the Holder may dispose of shares of Common Stock and the Company shall cause its transfer agent to deliver shares of Common Stock to a transferee of a Holder in connection with any sale of Registrable Securities with respect to which such Holder has entered into a contract for sale prior to the Holder's receipt of a notice from the Company of the happening of any event of the kind described in subclauses (i) and (ii) of this Section 2(g), and for which such Holder has not yet settled.

(h) Prior to any resale of Registrable Securities by a Holder, the Company shall use its commercially reasonable efforts to register or qualify or cooperate with the selling Holders in connection with the registration or qualification (or exemption from the registration or qualification) of such Registrable Securities for the resale by the Holder under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder reasonably requests in writing, to keep each registration or qualification (or exemption therefrom) effective during the Effectiveness Period and to do any and all other acts or things reasonably necessary to enable the disposition in such jurisdictions of the Registrable Securities covered by each Registration Statement, provided that the Company shall not be required to qualify generally to do business in any jurisdiction where it is not then so qualified, subject the Company to any material tax in any such jurisdiction where it is not then so subject or file a general consent to service of process in any such jurisdiction.

(i) If requested by a Holder, the Company shall cooperate with such Holder to facilitate the timely preparation and delivery of certificates or book-entry evidence representing Registrable Securities to be delivered to a transferee pursuant to a Registration Statement, which certificates or book-entry evidence shall be free, to the extent permitted by the Purchase Agreement, of all restrictive legends, and to enable such Registrable Securities to be in such denominations and registered in such names as any such Holder may request.

(j) Upon the occurrence of any event contemplated by Section 3(d), as promptly as reasonably practicable under the circumstances taking into account the Company's good faith assessment of any adverse consequences to the Company and its stockholders of the premature disclosure of such event, the Company shall prepare a supplement or amendment, including a post-effective amendment, to a Registration Statement or a supplement to the related Prospectus or any document incorporated or deemed to be incorporated therein by reference, and file any other required document so that, as thereafter delivered, neither a Registration Statement nor such Prospectus will contain an untrue statement of a material fact or omit to

state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. If the Company notifies the Holders in accordance with clauses (iii) through (vi) of Section 3(d) above to suspend the use of any Prospectus until the requisite changes to such Prospectus have been made, then the Holders shall suspend use of such Prospectus. The Company will use its commercially reasonable efforts to ensure that the use of the Prospectus may be resumed as promptly as is practicable. The Company shall be entitled to exercise its right under this Section 3(j) to suspend the availability of a Registration Statement and Prospectus, subject to the payment of partial liquidated damages otherwise required pursuant to Section 2(d), for a period not to exceed 60 calendar days (which need not be consecutive days) in any 12-month period.

(k) The Company shall otherwise use commercially reasonable efforts to comply with all applicable rules and regulations of the Commission under the Securities Act and the Exchange Act, including, without limitation, Rule 172 under the Securities Act, file any final Prospectus, including any supplement or amendment thereof, with the Commission pursuant to Rule 424 under the Securities Act, promptly inform the Holders in writing if, at any time during the Effectiveness Period, the Company does not satisfy the conditions specified in Rule 172 and, as a result thereof, the Holders are required to deliver a Prospectus in connection with any disposition of Registrable Securities and take such other actions as may be reasonably necessary to facilitate the registration of the Registrable Securities hereunder.

(l) The Company shall use commercially reasonable efforts to maintain eligibility for use of Form S-3 (or any successor form thereto) for the registration of the resale of Registrable Securities.

(m) The Company may require each selling Holder to furnish to the Company a certified statement as to the number of shares of Common Stock beneficially owned by such Holder and, if required by the Commission, the natural persons thereof that have voting and dispositive control over the shares. During any periods that the Company is unable to meet its obligations hereunder with respect to the registration of the Registrable Securities solely because any Holder fails to furnish such information within three Trading Days of the Company's request, any liquidated damages that are accruing at such time as to such Holder only shall be tolled and any Event that may otherwise occur solely because of such delay shall be suspended as to such Holder only, until such information is delivered to the Company.

4. Registration Expenses. All fees and expenses incident to the performance of or compliance with, this Agreement by the Company shall be borne by the Company whether or not any Registrable Securities are sold pursuant to a Registration Statement. The fees and expenses referred to in the foregoing sentence shall include, without limitation, (i) all registration and filing fees (including, without limitation, fees and

expenses of the Company's counsel and independent registered public accountants) (A) with respect to filings made with the Commission, (B) with respect to filings required to be made with any Trading Market on which the Common Stock is then listed for trading, and (C) in compliance with applicable state securities or Blue Sky laws reasonably agreed to by the Company in writing (including, without limitation, fees and disbursements of counsel for the Company in connection with Blue Sky qualifications or exemptions of the Registrable Securities), (ii) printing expenses (including, without limitation, expenses of printing certificates for Registrable Securities), (iii) messenger, telephone and delivery expenses, (iv) fees and disbursements of counsel for the Company, (v) Securities Act liability insurance, if the Company so desires such insurance, and (vi) fees and expenses of all other Persons retained by the Company in connection with the consummation of the transactions contemplated by this Agreement. In addition, the Company shall be responsible for all of its internal expenses incurred in connection with the consummation of the transactions contemplated by this Agreement (including, without limitation, all salaries and expenses of its officers and employees performing legal or accounting duties), the expense of any annual audit and the fees and expenses incurred in connection with the listing of the Registrable Securities on any securities exchange as required hereunder. In no event shall the Company be responsible for any broker or similar commissions of any Holder or, except to the extent provided for in the Transaction Documents, any legal fees or other costs of the Holders.

5. Indemnification.

(a) Indemnification by the Company. The Company shall, notwithstanding any termination of this Agreement, indemnify and hold harmless each Holder, the officers, directors, members, partners, agents, brokers (including brokers who offer and sell Registrable Securities as principal as a result of a pledge or any failure to perform under a margin call of Common Stock), investment advisors and employees (and any other Persons with a functionally equivalent role of a Person holding such titles, notwithstanding a lack of such title or any other title) of each of them, each Person who controls any such Holder (within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act) and the officers, directors, members, stockholders, partners, agents and employees (and any other Persons with a functionally equivalent role of a Person holding such titles, notwithstanding a lack of such title or any other title) of each such controlling Person, to the fullest extent permitted by applicable law, from and against any and all losses, claims, damages, liabilities, costs (including, without limitation, reasonable and documented attorneys' fees) and expenses (collectively, "Losses"), as incurred, arising out of or relating to (1) any untrue or alleged untrue statement of a material fact contained in a Registration Statement, any Prospectus or any form of prospectus or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading or (2) any violation or alleged violation by the Company of the Securities Act, the Exchange Act or any

state securities law, or any rule or regulation thereunder, in connection with the performance of its obligations under this Agreement, except to the extent, but only to the extent, that (i) such untrue statements or omissions are based solely upon information regarding such Holder furnished in writing to the Company by such Holder expressly for use therein, or to the extent that such information relates to such Holder or such Holder's proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in a Registration Statement, such Prospectus or in any amendment or supplement thereto (it being understood that the Holder has approved Annex A hereto for this purpose) or (ii) in the case of an occurrence of an event of the type specified in Section 3(d)(iii)-(vi), the use by such Holder of an outdated, defective or otherwise unavailable Prospectus after the Company has notified such Holder in writing that the Prospectus is outdated, defective or otherwise unavailable for use by such Holder and prior to the receipt by such Holder of the Advice contemplated in Section 6(c). The Company shall notify the Holders promptly of the institution, threat or assertion of any Proceeding arising from or in connection with the transactions contemplated by this Agreement of which the Company is aware. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such indemnified person and shall survive the transfer of any Registrable Securities by any of the Holders in accordance with Section 6(f).

(b) Indemnification by Holders. Each Holder shall, severally and not jointly, indemnify and hold harmless the Company, its directors, officers, agents and employees, each Person who controls the Company (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, agents or employees of such controlling Persons, to the fullest extent permitted by applicable law, from and against all Losses, as incurred, to the extent arising out of or based solely upon: any untrue or alleged untrue statement of a material fact contained in any Registration Statement, any Prospectus, or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading (i) to the extent, but only to the extent, that such untrue statement or omission is contained in any information so furnished in writing by such Holder to the Company expressly for inclusion in such Registration Statement or such Prospectus or (ii) to the extent, but only to the extent, that such information relates to such Holder's information provided in the Selling Stockholder Questionnaire or the proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in a Registration Statement (it being understood that the Holder has approved Annex A hereto for this purpose), such Prospectus or in any amendment or supplement thereto. In no event shall the liability of a selling Holder be greater in amount than the dollar amount of the proceeds (net of all expenses paid by such Holder in connection with any claim relating to this Section 5 and the amount of any damages such Holder has otherwise been required to pay by reason of such

untrue statement or omission) received by such Holder upon the sale of the Registrable Securities included in the Registration Statement giving rise to such indemnification obligation.

(c) Conduct of Indemnification Proceedings. If any Proceeding shall be brought or asserted against any Person entitled to indemnity hereunder (an "Indemnified Party"), such Indemnified Party shall promptly notify the Person from whom indemnity is sought (the "Indemnifying Party") in writing, and the Indemnifying Party shall have the right to assume the defense thereof, including the employment of counsel reasonably satisfactory to the Indemnified Party and the payment of all reasonable fees and expenses incurred in connection with defense thereof, provided that the failure of any Indemnified Party to give such notice shall not relieve the Indemnifying Party of its obligations or liabilities pursuant to this Agreement, except (and only) to the extent that it shall be finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) that such failure shall have materially and adversely prejudiced the Indemnifying Party.

An Indemnified Party shall have the right to employ separate counsel in any such Proceeding and to participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party or Parties unless: (1) the Indemnifying Party has agreed in writing to pay such fees and expenses, (2) the Indemnifying Party shall have failed promptly to assume the defense of such Proceeding and to employ counsel reasonably satisfactory to such Indemnified Party in any such Proceeding, or (3) the named parties to any such Proceeding (including any impleaded parties) include both such Indemnified Party and the Indemnifying Party, and counsel to the Indemnified Party shall reasonably believe that a material conflict of interest is likely to exist if the same counsel were to represent such Indemnified Party and the Indemnifying Party (in which case, if such Indemnified Party notifies the Indemnifying Party in writing that it elects to employ separate counsel at the expense of the Indemnifying Party, the Indemnifying Party shall not have the right to assume the defense thereof and the reasonable fees and expenses of no more than one separate counsel shall be at the expense of the Indemnifying Party). The Indemnifying Party shall not be liable for any settlement of any such Proceeding effected without its written consent, which consent shall not be unreasonably withheld or delayed. No Indemnifying Party shall, without the prior written consent of the Indemnified Party, effect any settlement of any pending Proceeding in respect of which any Indemnified Party is a party, unless such settlement includes an unconditional release of such Indemnified Party from all liability on claims that are the subject matter of such Proceeding.

Subject to the terms of this Agreement, all reasonable fees and expenses of the Indemnified Party (including reasonable fees and expenses to the extent incurred in connection with investigating or preparing to defend such Proceeding in a manner not inconsistent with this Section) shall be paid to the Indemnified

Party, as incurred, within ten Trading Days of written notice thereof to the Indemnifying Party, provided that the Indemnified Party shall promptly reimburse the Indemnifying Party for that portion of such fees and expenses applicable to such actions for which such Indemnified Party is finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) not to be entitled to indemnification hereunder.

(d) Contribution. If the indemnification under Section 5(a) or 5(b) is unavailable to an Indemnified Party or insufficient to hold an Indemnified Party harmless for any Losses, then each Indemnifying Party shall contribute to the amount paid or payable by such Indemnified Party, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions, statements or omissions that resulted in such Losses as well as any other relevant equitable considerations. The relative fault of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission of a material fact, has been taken or made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such action, statement or omission. The amount paid or payable by a party as a result of any Losses shall be deemed to include, subject to the limitations set forth in this Agreement, any reasonable attorneys' or other fees or expenses incurred by such party in connection with any Proceeding to the extent such party would have been indemnified for such fees or expenses if the indemnification provided for in this Section was available to such party in accordance with its terms.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 5(d) were determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to in the immediately preceding paragraph. In no event shall the contribution obligation of a Holder of Registrable Securities be greater in amount than the dollar amount of the proceeds (net of all expenses paid by such Holder in connection with any claim relating to this Section 5 and the amount of any damages such Holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission) received by it upon the sale of the Registrable Securities giving rise to such contribution obligation.

The indemnity and contribution agreements contained in this Section are in addition to any liability that the Indemnifying Parties may have to the Indemnified Parties.

6. Miscellaneous.

(a) Remedies. In the event of a breach by the Company or by a Holder of any of their respective obligations under this Agreement, each Holder or the Company, as the case may be, in addition to being entitled to exercise all rights granted by law and under this Agreement, including recovery of damages, shall be entitled to specific performance of its rights under this Agreement. Each of the Company and each Holder agrees that monetary damages would not provide adequate compensation for any losses incurred by reason of a breach by it of any of the provisions of this Agreement and hereby further agrees that, in the event of any action for specific performance in respect of such breach, it shall not assert or shall waive the defense that a remedy at law would be adequate.

(b) No Piggyback on Registrations; Prohibition on Filing Other Registration Statements. Except as set forth on Schedule 6(b) attached hereto, (i) neither the Company nor any of its security holders (other than the Holders in such capacity pursuant hereto) may include securities of the Company in any Registration Statements other than the Registrable Securities and (ii) the Company shall not file any other registration statements until all Registrable Securities are registered pursuant to a Registration Statement that is declared effective by the Commission, provided that this Section 6(b) shall not prohibit the Company from filing amendments to registration statements filed prior to the date of this Agreement.

(c) Discontinued Disposition. By its acquisition of Registrable Securities, each Holder agrees that, upon receipt of a notice from the Company of the occurrence of any event of the kind described in Section 3(d)(iii) through (vi), such Holder will forthwith discontinue disposition of such Registrable Securities under a Registration Statement until it is advised in writing (the "Advice") by the Company that the use of the applicable Prospectus (as it may have been supplemented or amended) may be resumed. The Company will use commercially reasonable efforts to ensure that the use of the Prospectus may be resumed as promptly as is practicable. The Company agrees and acknowledges that any periods during which the Holder is required to discontinue the disposition of the Registrable Securities hereunder shall be subject to the provisions of Section 2(d).

(d) Amendments and Waivers. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers or consents to departures from the provisions hereof may not be given, unless the same shall be in writing and signed by the Company and the Holders of 67% or more of the then outstanding Registrable Securities (for purposes of clarification, this includes any Registrable Securities issuable upon exercise or conversion of any Security), provided that, if any amendment, modification or waiver disproportionately and adversely impacts a Holder (or group of Holders), the consent of such disproportionately impacted Holder (or group of Holders) shall be required. If a Registration Statement does not register all of the Registrable Securities pursuant to a waiver or amendment done in compliance with the previous sentence, then the number of Registrable Securities to be registered for each Holder shall be reduced pro rata among all Holders and each Holder shall have the right to designate which of its Registrable Securities shall be omitted from such Registration Statement. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of a Holder

or some Holders and that does not directly or indirectly affect the rights of other Holders may be given only by such Holder or Holders of all of the Registrable Securities to which such waiver or consent relates; provided, however, that the provisions of this sentence may not be amended, modified, or supplemented except in accordance with the provisions of the first sentence of this Section 6(d). No consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of this Agreement unless the same consideration also is offered to all of the parties to this Agreement.

(e) Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be delivered as set forth in the Purchase Agreement.

(f) Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of each of the parties and shall inure to the benefit of each Holder. The Company may not assign (except by merger) its rights or obligations hereunder without the prior written consent of all of the Holders of the then outstanding Registrable Securities. Each Holder may assign their respective rights hereunder in the manner and to the Persons as permitted under Section 5.7 of the Purchase Agreement.

(g) No Inconsistent Agreements. Neither the Company nor any of its Subsidiaries has entered, as of the date hereof, nor shall the Company or any of its Subsidiaries, on or after the date of this Agreement, enter into any agreement with respect to its securities, that would have the effect of impairing the rights granted to the Holders in this Agreement or otherwise conflicts with the provisions hereof. Except as set forth on Schedule 6(g), neither the Company nor any of its Subsidiaries has previously entered into any agreement granting any registration rights with respect to any of its securities to any Person that have not been waived, satisfied or expired in full.

(h) Execution and Counterparts. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

(i) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Agreement shall be determined in accordance with the provisions of the Purchase Agreement.

(j) Cumulative Remedies. The remedies provided herein are cumulative and not exclusive of any other remedies provided by law.

(k) Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

(l) Headings. The headings in this Agreement are for convenience only, do not constitute a part of the Agreement and shall not be deemed to limit or affect any of the provisions hereof.

(m) Independent Nature of Holders' Obligations and Rights. The obligations of each Holder hereunder are several and not joint with the obligations of any other Holder hereunder, and no Holder shall be responsible in any way for the performance of the obligations of any other Holder hereunder. Nothing contained herein or in any other agreement or document delivered at any closing, and no action taken by any Holder pursuant hereto or thereto, shall be deemed to constitute the Holders as a partnership, an association, a joint venture or any other kind of group or entity, or create a presumption that the Holders are in any way acting in concert or as a group or entity with respect to such obligations or the transactions contemplated by this Agreement or any other matters, and the Company acknowledges that the Holders are not acting in concert or as a group, and the Company shall not assert any such claim, with respect to such obligations or transactions. Each Holder shall be entitled to protect and enforce its rights, including without limitation the rights arising out of this Agreement, and it shall not be necessary for any other Holder to be joined as an additional party in any proceeding for such purpose. The use of a single agreement with respect to the obligations of the Company contained was solely in the control of the Company, not the action or decision of any Holder, and was done solely for the convenience of the Company and not because it was required or requested to do so by any Holder. It is expressly understood and agreed that each provision contained in this Agreement is between the Company and a Holder, solely, and not between the Company and the Holders collectively and not between and among Holders.

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(Signature Pages Follow)

IN WITNESS WHEREOF, the parties have executed this Registration Rights Agreement as of the date first written above.

VACCINEX, INC.

By:/s/ Maurice Zauderer, Ph.D.
Name: Maurice Zauderer, Ph.D.
Title: President and Chief Executive Officer

[SIGNATURE PAGE OF HOLDERS FOLLOWS]

[SIGNATURE PAGE OF HOLDERS TO VCNX RRA]

Name of Holder: 3i, LP

Signature of Authorized Signatory of Holder: /s/ Maier Tarlow

Name of Authorized Signatory: Maier Tarlow

Title of Authorized Signatory: Manager on behalf of the General Partner

[SIGNATURE PAGES CONTINUE]

EXHIBIT 10.6

SECURITY AGREEMENT

This SECURITY AGREEMENT, dated as of July 31, 2020 (this "Agreement"), is among Vaccinex, Inc., a Delaware corporation (the "Company"), each Additional Debtor from time to time party hereto (together with the Company, the "Debtors") and 3i, LP, as collateral agent (in such capacity, the "Collateral Agent") for the holders of the Company's 7% Original Issue Discount Senior Secured Convertible Debentures due August 3, 2021, in the original aggregate principal amount of $8,640,000 (collectively, as amended, restated or otherwise modified from time to time, the "Debentures"), their endorsees, transferees and assigns (collectively, the "Secured Parties").

W I T N E S S E T H:

WHEREAS, pursuant to the Purchase Agreement, the Secured Parties have severally agreed to extend the loans to the Company evidenced by the Debentures;

WHEREAS, each wholly-owned domestic subsidiary of the Company (other than Vaccinex Products, L.P. in the event that it becomes a wholly-owned subsidiary) is required to execute and deliver a Subsidiary Guarantee (the "Guarantee"), whereby each such Subsidiary jointly and severally agrees to guarantee and act as surety for payment of such Debentures; and

WHEREAS, in order to induce the Secured Parties to extend the loans evidenced by the Debentures, each Debtor has agreed to execute and deliver to the Collateral Agent this Agreement and to grant Collateral Agent, for the benefit of the Secured Parties on a pari passu basis, a security interest in certain property of such Debtor to secure the prompt payment, performance and discharge in full of all of the Company's obligations under the Debentures and the Guarantors' obligations under the Guarantees.

NOW, THEREFORE, in consideration of the agreements herein contained and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto hereby agree as follows:

1. **Certain Definitions**. As used in this Agreement, the following terms shall have the meanings set forth in this Section 1. Terms used but not otherwise defined in this Agreement that are defined in Article 9 of the UCC (such as "account", "chattel paper", "commercial tort claim", "deposit account", "document", "equipment", "fixtures", "general intangibles", "goods", "instruments", "inventory", "investment property", "letter-of-credit rights", "proceeds" and "supporting obligations") shall have the respective meanings given such terms in Article 9 of the UCC. Terms used but not otherwise defined in this Agreement or the UCC shall have the respective meanings given such terms in the Debentures.

(a) "Collateral" means the collateral in which the Secured Parties are granted a security interest by this Agreement and which shall include the following personal property of the Debtors, whether presently owned or existing or hereafter acquired or coming into existence, wherever situated, and all additions and accessions thereto and all substitutions and replacements thereof, and all proceeds, products and accounts thereof,

including, without limitation, all proceeds from the sale or transfer of the Collateral and of insurance covering the same and of any tort claims in connection therewith, and all dividends, interest, cash, notes, securities, equity interest or other property at any time and from time to time acquired, receivable or otherwise distributed in respect of, or in exchange for, any or all of the Pledged Securities (as defined below):

(i) All goods, including, without limitation, (A) all machinery, equipment, computers, motor vehicles, trucks, tanks, boats, ships, appliances, furniture, special and general tools, fixtures, test and quality control devices and other equipment of every kind and nature and wherever situated, together with all documents of title and documents representing the same, all additions and accessions thereto, replacements therefor, all parts therefor, and all substitutes for any of the foregoing and all other items used and useful in connection with any Debtor's businesses and all improvements thereto; and (B) all inventory;

(ii) All contract rights and other general intangibles, including, without limitation, all partnership interests, membership interests, stock or other securities, rights under any of the Organizational Documents, agreements related to the Pledged Securities, licenses, distribution and other agreements, computer software (whether "off-the-shelf", licensed from any third party or developed by any Debtor), computer software development rights, leases, franchises, customer lists, quality control procedures, grants and rights, goodwill, Intellectual Property and income tax refunds;

(iii) All accounts, together with all instruments, all documents of title representing any of the foregoing, all rights in any merchandising, goods, equipment, motor vehicles and trucks which any of the same may represent, and all right, title, security and guaranties with respect to each account, including any right of stoppage in transit;

(iv) All documents, letter-of-credit rights, instruments and chattel paper;

(v) All commercial tort claims;

(vi) All deposit accounts and all cash (whether or not deposited in such deposit accounts);

(vii) All investment property;

(viii) All supporting obligations;

(ix) All files, records, books of account, business papers, and computer programs; and

(x) the products and proceeds of all of the foregoing Collateral set forth in clauses (i)-(ix) above;

provided that the Collateral shall not include any Excluded Property. Without limiting the generality of the foregoing, the "Collateral" shall include all investment property and general intangibles respecting ownership and/or other equity interests in each Guarantor, including, without limitation, the shares of capital stock and the other equity interests listed on Schedule G hereto (as the same may be modified from time to time pursuant to the terms hereof), and any other shares of capital stock and/or other equity interests of any other direct or indirect subsidiary of any Debtor obtained in the future, and, in each case, all certificates representing such shares and/or equity interests and, in each case, all rights, options, warrants, stock, other securities and/or equity interests that may hereafter be received, receivable or distributed in respect of, or exchanged for, any of the foregoing and all rights arising under or in connection with the Pledged Securities, including, but not limited to, all dividends, interest and cash.

Notwithstanding the foregoing, nothing herein shall be deemed to constitute an assignment of any asset which, in the event of an assignment, becomes void by operation of applicable law or the assignment of which is otherwise prohibited by applicable law (in each case to the extent that such applicable law is not overridden by Sections 9-406, 9-407 and/or 9-408 of the UCC or other similar applicable law); provided, however, that to the extent permitted by applicable law, this Agreement shall create a valid security interest in such asset and, to the extent permitted by applicable law, this Agreement shall create a valid security interest in the proceeds of such asset.

(b) "Excluded Deposit Account" means (i) a deposit account the balance of which consists exclusively of amounts to be used to fund payroll obligations, payroll taxes and other employee wage and benefit payments; (ii) health-savings accounts and worker's compensation accounts, (iii) trust accounts (including escrow accounts) and (iv) any deposit account for the sole purpose of holding cash that serves solely as collateral or security under any letter of credit or other obligation not prohibited by the Debentures.

(c) "Excluded Property" means (i) any intent-to-use trademark application prior to the filing of a "Statement of Use" or "Amendment to Allege Use" with the United States Patent and Trademark Office with respect thereto, to the extent, if any, that, and solely during the period, if any, in which, the grant of a security interest therein would impair the validity or enforceability of such intent-to-use trademark application under applicable federal law; (ii) any equipment securing purchase money indebtedness or capitalized lease obligations if the granting of a lien to any third party is prohibited by the agreement(s) setting forth the terms and conditions applicable to such indebtedness, provided that if and when the prohibition which prevents the granting of a lien in any such property is removed, terminated or otherwise becomes unenforceable as a matter of law (including, without limitation, the termination of any such security interest resulting from the satisfaction of the indebtedness secured thereby), and notwithstanding any

previous release of lien provided by the Secured Parties requested with respect to any such indebtedness, the Excluded Property will no longer include such property and the Collateral Agent will be deemed to have, and at all times to have had, a security interest in such property; (iii)(x) any assets for which the grant of a security interest, therein or the pledge thereof (A)(I) is prohibited by or in violation of any applicable law, rule or regulation at any time or (II) requires governmental approval that has not been obtained (in each case, after giving effect to the applicable anti-assignment provisions of the UCC of any relevant jurisdiction) or (B) is prohibited by any contract (solely with respect to the assets subject to such contract) or would trigger termination under any such contract binding on such assets (in each case, after giving effect to the applicable anti-assignment provisions of the UCC of any relevant jurisdiction), (y) any lease, license or other agreement to the extent, and for so long as, a security interest therein is prohibited by or in violation of a term, provision or condition of, or would invalidate or give any other party thereto the right to terminate, any such lease, license or agreement (in each case, after giving effect to the applicable anti-assignment provisions of the UCC of any relevant jurisdiction) or (z) any license or permit from any governmental authority or state or local franchise, charter or authorization to the extent, and for so long as, a security interest therein is prohibited or restricted pursuant to the terms thereof (in each case, after giving effect to the applicable anti-assignment provisions of the UCC); (iv) Excluded Deposit Accounts; (v) interests in joint ventures not constituting Subsidiaries which cannot be pledged without the consent of third parties after giving effect to the applicable anti-assignment provisions of the UCC, so long as the term giving rise to such prohibition or restriction was not implemented in anticipation of this exclusion; and (vi) equity interests in Vaccinex Products, L.P.

(d) "Intellectual Property" means the collective reference to all rights, priorities and privileges relating to intellectual property, whether arising under United States, multinational or foreign laws or otherwise, including, without limitation, (i) all copyrights arising under the laws of the United States, any other country or any political subdivision thereof, whether registered or unregistered and whether published or unpublished, all registrations and recordings thereof, and all applications in connection therewith, including, without limitation, all registrations, recordings and applications in the United States Copyright Office, (ii) all letters patent of the United States, any other country or any political subdivision thereof, all reissues and extensions thereof, and all applications for letters patent of the United States or any other country and all divisions, continuations and continuations-in-part thereof, (iii) all trademarks, trade names, corporate names, company names, business names, fictitious business names, trade dress, service marks, logos, domain names and other source or business identifiers, and all goodwill associated therewith, now existing or hereafter adopted or acquired, all registrations and recordings thereof, and all applications in connection therewith, whether in the United States Patent and Trademark Office or in any similar office or agency of the United States, any State thereof or any other country or any political subdivision thereof, or otherwise, and all common law rights related thereto, (iv) all trade secrets arising under the laws of the United States, any other country or any political subdivision thereof, (v) all rights to obtain any reissues, renewals or extensions of the foregoing, (vi)

all licenses for any of the foregoing, and (vii) all causes of action for infringement of the foregoing.

(e) "Majority in Interest" means, at any time of determination, the majority in interest (based on then-outstanding principal amounts of Debentures at the time of such determination) of the Secured Parties.

(f) "Necessary Endorsement" means undated stock powers endorsed in blank or other proper instruments of assignment duly executed and such other instruments or documents as the Collateral Agent (as that term is defined below) may reasonably request.

(g) "Obligations" means all of the liabilities and obligations (primary, secondary, direct, contingent, sole, joint or several) due or to become due, or that are now or may be hereafter contracted or acquired, or owing to, of any Debtor to the Secured Parties under this Agreement, the Debentures, the Guarantee and any other instruments, agreements or other documents executed and/or delivered in connection herewith or therewith (other than the Registration Rights Agreement), in each case, whether now or hereafter existing, voluntary or involuntary, direct or indirect, absolute or contingent, liquidated or unliquidated, whether or not jointly owed with others, and whether or not from time to time decreased or extinguished and later increased, created or incurred, and all or any portion of such obligations or liabilities that are paid, to the extent all or any part of such payment is avoided or recovered directly or indirectly from any of the Secured Parties as a preference, fraudulent transfer or otherwise as such obligations may be amended, supplemented, converted, extended or modified from time to time. Without limiting the generality of the foregoing, the term "Obligations" shall include, without limitation: (i) principal of, and interest on the Debentures and the loans extended pursuant thereto; (ii) any and all other fees, indemnities, costs, obligations and liabilities of the Debtors owing from time to time under or in connection with this Agreement, the Debentures, the Guarantee and any other instruments, agreements or other documents executed and/or delivered in connection herewith or therewith (other than the Registration Rights Agreement); and (iii) all amounts (including but not limited to post-petition interest) in respect of the foregoing that would be payable but for the fact that the obligations to pay such amounts are unenforceable or not allowable due to the existence of a bankruptcy, reorganization or similar proceeding involving any Debtor.

(h) "Organizational Documents" means with respect to any Debtor, the documents by which such Debtor was organized (such as a certificate of incorporation, certificate of limited partnership, certificate of formation or articles of organization, and including, without limitation, any certificates of designation for preferred stock or other forms of preferred equity) and which relate to the internal governance of such Debtor (such as bylaws, a partnership agreement or an operating, limited liability or members agreement).

(i) "Person" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint

stock company, government (or an agency or subdivision thereof) or other entity of any kind.

(j) "Pledged Interests" shall have the meaning ascribed to such term in Section 4(j).

(k) "Pledged Securities" shall have the meaning ascribed to such term in Section 4(i).

(l) "UCC" means the Uniform Commercial Code of the State of New York and or any other applicable law of any state or states which has jurisdiction with respect to all, or any portion of, the Collateral or this Agreement, from time to time. It is the intent of the parties that defined terms in the UCC should be construed in their broadest sense so that the term "Collateral" will be construed in its broadest sense. Accordingly if there are, from time to time, changes to defined terms in the UCC that broaden the definitions, they are incorporated herein and if existing definitions in the UCC are broader than the amended definitions, the existing ones shall be controlling.

2. **Grant of Security Interest in Collateral**. As an inducement for the Secured Parties to extend the loans as evidenced by the Debentures and to secure the complete and timely payment, performance and discharge in full, as the case may be, of all of the Obligations, each Debtor hereby unconditionally and irrevocably pledges, grants and hypothecates to the Collateral Agent a security interest in and to, a lien upon and a right of set-off against all of their respective right, title and interest of whatsoever kind and nature in and to, the Collateral (a "Security Interest" and, collectively, the "Security Interests").

3. **Delivery of Certain Collateral**. Contemporaneously or prior to the execution of this Agreement, each Debtor shall deliver or cause to be delivered to the Collateral Agent any and all certificates and other instruments representing or evidencing the Pledged Securities owned by such Debtor on the date hereof, together with all Necessary Endorsements. The Debtors are, contemporaneously with the execution hereof, delivering to Collateral Agent, or have previously delivered to Collateral Agent, a true and correct copy of each Organizational Document governing any of the Pledged Securities.

4. **Representations, Warranties, Covenants and Agreements of the Debtors**. Except as set forth under the corresponding section of the disclosure schedules delivered to the Collateral Agent concurrently herewith (the "Disclosure Schedules"), which Disclosure Schedules shall be deemed a part hereof, each Debtor represents and warrants to, and covenants and agrees with, the Secured Parties as follows (*provided* that, no Debtor makes any representation or warranty or covenants with respect to any Excluded Property):

(a) Each Debtor has the requisite corporate, partnership, limited liability company or other power and authority to enter into this Agreement and otherwise to carry out its obligations hereunder. The execution, delivery and performance by each Debtor of this Agreement and the filings contemplated therein have been duly authorized by all necessary action on the part of such Debtor and no further action is required by such

Debtor. This Agreement has been duly executed by each Debtor. This Agreement constitutes the legal, valid and binding obligation of each Debtor, enforceable against each Debtor in accordance with its terms except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization and similar laws of general application relating to or affecting the rights and remedies of creditors and by general principles of equity.

(b) As of the date hereof, the Debtors have no place of business or offices where their respective books of account and records are kept (other than temporarily at the offices of its attorneys or accountants) or places where Collateral (excluding Collateral which is out for repair or in transit) in excess of $10,000 in the aggregate is stored or located, except as set forth on Schedule A attached hereto. Except as specifically set forth on Schedule A, no Debtor is the record owner of any real property as of the date hereof, and there exist no mortgages or other liens on any real property listed on Schedule A except for Permitted Liens. Except as disclosed on Schedule A, none of the Collateral consisting of inventory is in the possession of any consignee, bailee, warehouseman, agent or processor as of the date hereof.

(c) Except for Permitted Liens and except as set forth on Schedule B attached hereto, the Debtors are the sole owner of the Collateral (except for non-exclusive licenses granted by any Debtor in the ordinary course of business), free and clear of any liens, security interests, encumbrances, rights or claims, and are fully authorized to grant the Security Interests. Except as set forth on Schedule C attached hereto, there is not on file in any governmental or regulatory authority, agency or recording office an effective financing statement, security agreement, license or transfer or any notice of any of the foregoing (other than those that will be filed in favor of the Collateral Agent pursuant to this Agreement) covering or affecting any of the Collateral as of the date hereof. Except as set forth on Schedule C attached hereto and except pursuant to this Agreement, as long as this Agreement shall be in effect, the Debtors shall not execute and shall not knowingly permit to be on file in any such office or agency any other financing statement or other document or instrument (except to the extent filed or recorded in favor of the Collateral Agent pursuant to the terms of this Agreement or in connection with any Permitted Lien).

(d) [Reserved].

(e) Each Debtor shall at all times maintain its books of account and records relating to the Collateral and the Collateral at the locations set forth on Schedule A attached hereto, except for Collateral (i) which is out for repair or in transit, (ii) which is in the possession of (or in route to) any Secured Party or the Collateral Agent or any of their agents, representatives or designees, (iii) aggregating less than $10,000 in fair market value outstanding at any one time. Subject to the exceptions in the preceding sentence, each Debtor may not relocate such books of account and records or tangible Collateral unless it delivers to the Collateral Agent at least 10 days prior to such relocation (i) written notice of such relocation and the new location thereof (which must be within the United States) and (ii) evidence that appropriate financing statements under

the UCC and other necessary documents have been filed and recorded and other steps have been taken to perfect the Security Interests to create in favor of the Collateral Agent a valid, perfected and continuing perfected first priority lien in the Collateral.

(f) This Agreement creates in favor of the Collateral Agent a valid security interest in the Collateral, subject only to Permitted Liens securing the payment and performance of the Obligations. Upon making the filings described in the immediately following paragraph, all security interests created hereunder in any Collateral which may be perfected by filing Uniform Commercial Code financing statements shall have been duly perfected. Except for the filing of the Uniform Commercial Code financing statements referred to in the immediately following paragraph, the recordation of the Intellectual Property Security Agreement (as defined in Section 4(p) hereof) with respect to copyrights and copyright applications in the United States Copyright Office referred to in paragraph (m), the execution and delivery of deposit account control agreements satisfying the requirements of Section 9-104(a)(2) of the UCC with respect to each deposit account of the Debtors, and the delivery of the certificates and other instruments provided in Section 3, no action is necessary to create, perfect or protect the security interests created hereunder in any Collateral that is material to the business of the Debtors. Without limiting the generality of the foregoing, except for the filing of said financing statements, the recordation of said Intellectual Property Security Agreement, and the execution and delivery of said deposit account control agreements, no consent of any third parties and no authorization, approval or other action by, and no notice to or filing with, any governmental authority or regulatory body is required for (i) the execution, delivery and performance of this Agreement or (ii) the creation or perfection of the Security Interests created hereunder in the Collateral.

(g) Each Debtor hereby authorizes the Collateral Agent to file one or more financing or continuation statements and amendments thereto under the UCC, with respect to the Security Interests, with the proper filing and recording agencies in any jurisdiction deemed proper by it.

(h) The execution, delivery and performance of this Agreement by the Debtors does not (i) violate any of the provisions of any Organizational Documents of any Debtor or any judgment, decree, order or award of any court, governmental body or arbitrator or any applicable law, rule or regulation applicable to any Debtor or (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any material agreement, credit facility, debt or other instrument (evidencing any Debtor's debt or otherwise) or other understanding to which any Debtor is a party or by which any property or asset of any Debtor is bound or affected. If any, all required consents (including, without limitation, from stockholders or creditors of any Debtor) necessary for any Debtor to enter into and perform its obligations hereunder have been obtained.

(i) The capital stock and other equity interests listed on Schedule G hereto (the "Pledged Securities") represent all of the capital stock and other equity interests of

the Guarantors, and represent all capital stock and other equity interests owned, directly or indirectly, by the Company. All of the Pledged Securities issued by a Subsidiary are validly issued, fully paid and if a corporation, nonassessable, and the Company is the legal and beneficial owner of the Pledged Securities, free and clear of any lien, security interest or other encumbrance except for the security interests created by this Agreement and other Permitted Liens (as defined in the Debentures).

(j) The ownership and other equity interests in partnerships and limited liability companies (if any) included in the Collateral (the "Pledged Interests") by their express terms do not provide that they are securities governed by Article 8 of the UCC and are not held in a securities account or by any financial intermediary.

(k) Except for Permitted Liens, each Debtor shall at all times maintain the liens and Security Interests provided for hereunder as valid and perfected first priority liens and security interests in the Collateral in favor of the Collateral Agent to the extent required hereunder until this Agreement and the Security Interest hereunder shall be terminated pursuant to Section 14 hereof. Each Debtor hereby agrees to defend the same against the claims of any and all persons and entities (other than Permitted Liens). Each Debtor shall safeguard and protect all Collateral for the account of the Secured Parties. At the request of the Collateral Agent, each Debtor will sign and deliver to the Collateral Agent on behalf of the Secured Parties at any time or from time to time one or more financing statements pursuant to the UCC in form reasonably satisfactory to the Collateral Agent and will pay the cost of filing the same in all public offices wherever filing is, or is deemed by the Collateral Agent to be, necessary or desirable to effect the rights and obligations provided for herein. Without limiting the generality of the foregoing, each Debtor shall pay all fees, taxes and other amounts necessary to maintain the Collateral and the Security Interests hereunder, and each Debtor shall obtain and furnish to the Collateral Agent from time to time, upon demand, such releases and/or subordinations of claims and liens which may be required to maintain the priority of the Security Interests hereunder.

(l) [Reserved].

(m) Each Debtor shall keep and preserve its equipment, inventory and other tangible Collateral in good condition, repair and order (except for ordinary wear and tear and casualty and condemnation events) and shall not operate or locate any such Collateral (or cause to be operated or located) in any area excluded from insurance coverage.

(n) Each Debtor shall maintain with financially sound and reputable insurers, insurance with respect to the Collateral, including Collateral hereafter acquired, against loss or damage of the kinds and in the amounts customarily insured against by entities of established reputation having similar properties similarly situated and in such amounts as are customarily carried under similar circumstances by other such entities and otherwise as is prudent for entities engaged in similar businesses. Each Debtor shall cause each casualty or general liability insurance policy issued in connection herewith to provide, and the insurer issuing such policy to certify to the Collateral Agent, that (a) the

Collateral Agent will be named as lender loss payee and additional insured under each such insurance policy; (b) if such insurance be proposed to be cancelled for any reason whatsoever, such insurer will promptly notify the Collateral Agent and such cancellation shall not be effective as to the Collateral Agent for at least thirty (30) days (ten (10) days' in the case of nonpayment of insurance premiums) after receipt by the Collateral Agent of such notice, unless the effect of such change is to extend or increase coverage under the policy; and (c) the Collateral Agent will have the right (but no obligation) at its election to remedy any default in the payment of premiums within ten (10) days of notice from the insurer of such default. Unless an Event of Default (as defined in the Debentures) exists, loss payments in each instance will be applied by the applicable Debtor to the repair and/or replacement of property with respect to which the loss was incurred to the extent reasonably feasible, and any loss payments or the balance thereof remaining, to the extent not so applied and any other payments in respect of such insurance, shall be payable to the applicable Debtor; provided, however, that payments received by any Debtor after an Event of Default occurs and is continuing shall at the election of the Collateral Agent be paid to the Collateral Agent on behalf of the Secured Parties and, if received by such Debtor, shall be held in trust for the Secured Parties and promptly paid over to the Collateral Agent unless otherwise directed in writing by the Collateral Agent. Copies of such policies or the related certificates, in each case, naming the Collateral Agent as lender loss payee and additional insured shall be delivered to the Collateral Agent at least annually and at the time any new policy of insurance is issued.

(o) [Reserved].

(p) Each Debtor shall promptly execute and deliver to the Collateral Agent such further deeds, mortgages, assignments, security agreements, financing statements or other instruments, documents, certificates and assurances and take such further action as the Collateral Agent may from time to time request and may in its sole discretion deem necessary to perfect, protect or enforce the Secured Parties' security interest in the Collateral, in each case, to the extent such perfection, protection or enforcement is otherwise required herein including, without limitation, if applicable, the execution and delivery of, at the request of the Collateral Agent, a separate security agreement with respect to each Debtor's Intellectual Property ("Intellectual Property Security Agreement") in which the Secured Parties have been granted a security interest hereunder, substantially in a form reasonably acceptable to the Collateral Agent, which Intellectual Property Security Agreement, other than as stated therein, shall be subject to all of the terms and conditions hereof.

(q) Each Debtor shall permit the Collateral Agent and its representatives and agents to inspect the Collateral during normal business hours in a manner that does not unduly interfere with the business and operations of the Debtors and upon reasonable prior notice, and to make copies of records pertaining to the Collateral as may be reasonably requested by the Collateral Agent from time to time, but in any event no more than once in any six-month period absent an Event of Default. Notwithstanding anything to the contrary herein or in the Debentures, in no event shall the Debtors or any Subsidiary be required to provide any such information which reasonably (i) violates any

binding confidentiality obligations of the Debtors and/or their Subsidiaries to a Person other than another Debtor or any of its Subsidiaries, (ii) constitutes non-financial trade secrets or non-financial proprietary information, (iii) in respect of which disclosure to the Collateral Agent or any Secured Party (or their respective representatives or contractors) is prohibited by applicable law or (iv) is subject to attorney-client or similar privilege or constitutes attorney work-product.

(r) Each Debtor shall take all commercially reasonable steps that such Debtor determines is reasonably necessary to diligently pursue and seek to preserve, enforce and collect any rights, claims, causes of action and accounts receivable in respect of the Collateral.

(s) Each Debtor shall promptly notify the Collateral Agent in sufficient detail upon becoming aware of any attachment, garnishment, execution or other legal process levied against any Collateral and of any other information received by such Debtor that may materially affect the value of the Collateral (taken as a whole), the Security Interest or the rights and remedies of the Secured Parties hereunder.

(t) All information heretofore, herein or hereafter supplied to the Secured Parties (other than any statement or information which constitutes projections, forward-looking statements, budgets, estimates, industry-specific information or general market data) by or on behalf of any Debtor with respect to the Collateral is accurate and complete in all material respects as of the date furnished. All written projections, forward-looking statements and budgets were prepared on the basis of information and estimates the Debtors believed to be reasonable at the time of their preparation (it being understood and agreed that (x) any financial or business projections or forecasts furnished are subject to significant uncertainties and contingencies, which may be beyond the control of any Debtor, (y) no assurance is given by any Debtor that the results or forecast in any such projections will be realized and (z) the actual results may differ from the forecast results set forth in such projections and such differences may be material).

(u) [Reserved].

(v) No Debtor will change its name, type of organization, jurisdiction of organization, organizational identification number (if it has one), legal or corporate structure, or identity, or add any new fictitious name unless it provides at least 10 days prior written notice (or such shorter period as the Collateral Agent may agree to in its sole discretion) to the Collateral Agent of such change and, at the time of such written notification, such Debtor provides any financing statements or fixture filings necessary to perfect and continue the perfection of the Security Interests granted and evidenced by this Agreement.

(w) [Reserved].

(x) No Debtor may relocate its chief executive office to a new location without providing 10 days prior written notification (or such shorter period as the

Collateral Agent may agree to in its sole discretion) thereof to the Secured Parties and so long as, at the time of such written notification, such Debtor provides any financing statements or fixture filings necessary to perfect and continue the perfection of the Security Interests granted and evidenced by this Agreement.

(y) As of the date hereof, each Debtor was organized and remains organized solely under the laws of the state set forth next to such Debtor's name in Schedule D attached hereto, which Schedule D sets forth each Debtor's organizational identification number or, if any Debtor does not have one, states that one does not exist.

(z) As of the date hereof, (i) The actual name of each Debtor is the name set forth in Schedule D attached hereto; (ii) no Debtor has any trade names except as set forth on Schedule E attached hereto; (iii) no Debtor has used any name other than that stated in the preamble hereto or as set forth on Schedule E for the preceding five years; and (iv) no entity has merged into any Debtor or been acquired by any Debtor within the past five years except as set forth on Schedule E.

(aa) [Reserved].

(bb) Each Debtor, in its capacity as issuer, hereby agrees to comply with any and all orders and instructions of Collateral Agent regarding the Pledged Interests during the existence of an Event of Default consistent with the terms of this Agreement without the further consent of any Debtor as contemplated by Section 8-106 (or any successor section) of the UCC. Further, each Debtor agrees that it shall not enter into a similar agreement (or one that would confer "control" within the meaning of Article 8 of the UCC) with any other person or entity.

(cc) [Reserved].

(dd) [Reserved].

(ee) [Reserved].

(ff) [Reserved].

(gg) If any Debtor shall at any time hold or acquire a commercial tort claim, such Debtor shall promptly notify the Collateral Agent in a writing signed by such Debtor of the particulars thereof and grant to the Collateral Agent in such writing a security interest therein and in the proceeds thereof, all upon the terms of this Agreement, with such writing to be in form and substance reasonably satisfactory to the Collateral Agent.

(hh) [Reserved].

(ii) Each Debtor shall cause each wholly-owned domestic Subsidiary of the Company to promptly upon become a party hereto (an "Additional Debtor"), by executing and delivering an Additional Debtor Joinder in substantially the form of Annex

A attached hereto and comply with the provisions hereof applicable to the Debtors. Concurrent therewith, the Additional Debtor shall deliver replacement schedules for, or supplements to all other Schedules to (or referred to in) this Agreement, as applicable, which replacement schedules shall supersede, or supplements shall modify, the Schedules then in effect. The Additional Debtor shall also deliver such opinions of counsel, authorizing resolutions, good standing certificates, incumbency certificates, organizational documents, financing statements and other information and documentation as the Collateral Agent may reasonably request. Upon delivery of the foregoing to the Collateral Agent, the Additional Debtor shall be and become a party to this Agreement with the same rights and obligations as the Debtors, for all purposes hereof as fully and to the same extent as if it were an original signatory hereto and shall be deemed to have made the representations, warranties and covenants set forth herein as of the date of execution and delivery of such Additional Debtor Joinder, and all references herein to the "Debtors" shall be deemed to include each Additional Debtor.

(jj) Each Debtor shall vote the Pledged Securities to comply with the covenants and agreements set forth herein and in the Debentures.

(kk) [Reserved].

(ll) In the event that, upon an occurrence of an Event of Default, Collateral Agent shall sell all or any of the Pledged Securities to another party or parties (herein called the "Transferee") or shall purchase or retain all or any of the Pledged Securities, each Debtor shall, to the extent applicable: (i) deliver to Collateral Agent or the Transferee, as the case may be, the articles of incorporation, bylaws, minute books, stock certificate books, corporate seals, deeds, leases, indentures, agreements, evidences of indebtedness, books of account, financial records and all other Organizational Documents and records of the Debtors and their direct and indirect subsidiaries; (ii) use its best efforts to obtain resignations of the persons then serving as officers and directors of the Debtors and their direct and indirect subsidiaries, if so requested; and (iii) use its best efforts to obtain any approvals that are required by any governmental or regulatory body in order to permit the sale of the Pledged Securities to the Transferee or the purchase or retention of the Pledged Securities by Collateral Agent and allow the Transferee or Collateral Agent to continue the business of the Debtors and their direct and indirect subsidiaries.

(mm) Without limiting the generality of the other obligations of the Debtors hereunder, each Debtor shall promptly (i) to the extent such Debtor determines necessary to the conduct of its business, cause to be registered at the United States Copyright Office all of its material copyrights, (ii) cause the security interest contemplated hereby with respect to all Intellectual Property registered at the United States Copyright Office or United States Patent and Trademark Office to be duly recorded at the applicable office, and (iii) after it acquires (whether absolutely or by license) or creates any additional material Intellectual Property registered at the United States Copyright Office or United States Patent and Trademark Office, give the Agent notice thereof promptly (but in any

event no later than the date that it files financial statements with the SEC for the fiscal quarter in which such material Intellectual Property was acquired or created).

(nn) Each Debtor will from time to time, at the joint and several expense of the Debtors, promptly execute and deliver all such further financing statements or Intellectual Property Security Agreements as may be necessary or desirable, or as the Collateral Agent may reasonably request, in order to perfect and protect any security interest granted or purported to be granted hereby or to enable the Collateral Agent to exercise and enforce its rights and remedies hereunder and with respect to any Collateral or to otherwise carry out the purposes of this Agreement.

(oo) Schedule F attached hereto lists all of the material registered patents, patent applications, registered trademarks, trademark applications and registered copyrights within the United States copyright office or United States Patent and Trademark Office owned by any of the Debtors as of the date hereof. Schedule F lists all material licenses in favor of any Debtor for the use of any patents, trademarks, copyrights and domain names as of the date hereof. All material patents, trademarks and copyrights of the Debtors have been duly recorded as applicable, at the United States Patent and Trademark Office, the United States Copyright Office or in any similar office or agency of the United States, any State thereof or any other country or any political subdivision thereof.

(pp) Except as set forth on Schedule H attached hereto, none of the account debtors of a Debtor as of the date hereof is a governmental authority covered by the Federal Assignment of Claims Act or any similar federal, state or local statute or rule in respect of any accounts of such Debtor.

(qq) Until the Obligations (other than inchoate indemnification obligations that have not yet been asserted and those other Obligations expressly stated to survive any termination) shall have been paid and performed in full, the Company covenants that it shall promptly direct any wholly-owned domestic subsidiary of the Company (other than Vaccinex Products, L.P. in the event that it becomes a wholly-owned subsidiary) formed or acquired after the date hereof to enter into a Subsidiary Guarantee in favor of the Secured Party, in the form of Exhibit D to the Purchase Agreement.

5. **Effect of Pledge on Certain Rights**. If any of the Collateral subject to this Agreement consists of nonvoting equity or ownership interests (regardless of class, designation, preference or rights) that may be converted into voting equity or ownership interests upon the occurrence of certain events (including, without limitation, upon the transfer of all or any of the other stock or assets of the issuer), it is agreed that the pledge of such equity or ownership interests pursuant to this Agreement or the enforcement of any of Collateral Agent's rights hereunder shall not be deemed to be the type of event which would trigger such conversion rights notwithstanding any provisions in the Organizational Documents or agreements to which any Debtor is subject or to which any Debtor is party.

6. [Reserved].

7. **Duty To Hold In Trust**.

(a) Upon the Collateral Agent's request after an Event of Default has occurred and is continuing, each Debtor shall, upon receipt of any revenue, income, dividend, interest or other sums subject to the Security Interests, whether payable pursuant to the Debentures or otherwise, or of any check, draft, note, trade acceptance or other instrument evidencing an obligation to pay any such sum, hold the same in trust for the Secured Parties and shall promptly endorse and transfer any such sums or instruments, or both, to the Secured Parties, pro-rata in proportion to their respective then-currently outstanding principal amount of Debentures for application to the satisfaction of the Obligations (and if any Debenture is not outstanding, pro-rata in proportion to the initial purchases of the remaining Debentures).

(b) Upon the Collateral Agent's request after an Event of Default has occurred and is continuing, if any Debtor shall become entitled to receive or shall receive any securities or other property (including, without limitation, shares of Pledged Securities or instruments representing Pledged Securities acquired after the date hereof, or any options, warrants, rights or other similar property or certificates representing a dividend, or any distribution in connection with any recapitalization, reclassification or increase or reduction of capital, or issued in connection with any reorganization of such Debtor or any of its direct or indirect subsidiaries) in respect of the Pledged Securities (whether as an addition to, in substitution of, or in exchange for, such Pledged Securities or otherwise), such Debtor agrees to (i) accept the same as the agent of the Secured Parties; (ii) hold the same in trust on behalf of and for the benefit of the Secured Parties; and (iii) to deliver any and all certificates or instruments evidencing the same to Collateral Agent on or before the close of business on the fifth business day following the receipt thereof by such Debtor, in the exact form received together with the Necessary Endorsements, to be held by Collateral Agent subject to the terms of this Agreement as Collateral.

8. **Rights and Remedies Upon Default**.

(a) Upon the occurrence and during the continuance of any Event of Default, the Secured Parties, acting through the Collateral Agent, shall have the right to exercise all of the remedies conferred hereunder and under the Debentures, and the Collateral Agent shall have all the rights and remedies of a secured party under the UCC. Without limitation, the Collateral Agent, for the benefit of the Secured Parties, shall have the following rights and powers during the existence of an Event of Default:

(i) The Collateral Agent shall have the right to take possession of the Collateral and, for that purpose, enter, with the aid and assistance of any person, any premises where the Collateral, or any part thereof, is or may be placed and remove the same, and each Debtor shall assemble the Collateral and make it available to the Collateral Agent at places which the Collateral Agent shall reasonably select, whether at such Debtor's premises or elsewhere, and make available to the Collateral Agent, without rent, all of such Debtor's respective

premises and facilities for the purpose of the Collateral Agent taking possession of, removing or putting the Collateral in saleable or disposable form.

(ii) Upon notice to the Debtors by Collateral Agent, all rights of each Debtor to exercise the voting and other consensual rights which it would otherwise be entitled to exercise and all rights of each Debtor to receive the dividends and interest which it would otherwise be authorized to receive and retain, shall cease. Upon such notice, Collateral Agent shall have the right to receive, for the benefit of the Secured Parties, any interest, cash dividends or other payments on the Collateral and, at the option of Collateral Agent, to exercise in such Collateral Agent's discretion all voting rights pertaining thereto. Without limiting the generality of the foregoing, Collateral Agent shall have the right (but not the obligation) to exercise all rights with respect to the Collateral as it were the sole and absolute owner thereof, including, without limitation, to vote and/or to exchange, at its sole discretion, any or all of the Collateral in connection with a merger, reorganization, consolidation, recapitalization or other readjustment concerning or involving the Collateral or any Debtor or any of its direct or indirect subsidiaries.

(iii) The Collateral Agent shall have the right to operate the business of each Debtor using the Collateral and shall have the right to assign, sell, lease or otherwise dispose of and deliver all or any part of the Collateral, at public or private sale or otherwise, either with or without special conditions or stipulations, for cash or on credit or for future delivery, in such parcel or parcels and at such time or times and at such place or places, and upon such terms and conditions as the Collateral Agent may deem commercially reasonable, all without (except as shall be required by applicable statute and cannot be waived) advertisement or demand upon or notice to any Debtor or right of redemption of a Debtor, which are hereby expressly waived. Upon each such sale, lease, assignment or other transfer of Collateral, the Collateral Agent, for the benefit of the Secured Parties, may, unless prohibited by applicable law which cannot be waived, purchase all or any part of the Collateral being sold, free from and discharged of all trusts, claims, right of redemption and equities of any Debtor, which are hereby waived and released.

(iv) The Collateral Agent shall have the right (but not the obligation) to notify any account debtors and any obligors under instruments or accounts to make payments directly to the Collateral Agent, on behalf of the Secured Parties, and to enforce the Debtors' rights against such account debtors and obligors.

(v) The Collateral Agent, for the benefit of the Secured Parties, may (but is not obligated to) direct any financial intermediary or any other person or entity holding any investment property to transfer the same to the Collateral Agent, on behalf of the Secured Parties, or its designee.

(vi) The Collateral Agent may (but is not obligated to) transfer any or all Intellectual Property registered in the name of any Debtor at the United States Patent and Trademark Office and/or Copyright Office into the name of the Secured Parties or any designee or any purchaser of any Collateral.

(b) The Collateral Agent shall comply with any applicable law in connection with a disposition of Collateral and such compliance will not be considered adversely to affect the commercial reasonableness of any sale of the Collateral. The Collateral Agent may sell the Collateral without giving any warranties and may specifically disclaim such warranties. If the Collateral Agent sells any of the Collateral on credit, the Debtors will only be credited with payments actually made by the purchaser. In addition, each Debtor waives any and all rights that it may have to a judicial hearing in advance of the enforcement of any of the Collateral Agent's rights and remedies hereunder, including, without limitation, its right following an Event of Default to take immediate possession of the Collateral and to exercise its rights and remedies with respect thereto.

(c) For the purpose of enabling the Collateral Agent to further exercise rights and remedies under this Section 8 or elsewhere provided by agreement or applicable law, each Debtor hereby grants to the Collateral Agent, for the benefit of the Collateral Agent and the Secured Parties, to the extent permitted by applicable law and, solely with respect to licenses under which such Debtor is a licensee, to the extent contractually permitted under the terms of such licenses if applicable law would give effect to the limits or transferability contained therein, an irrevocable, nonexclusive license (exercisable without payment of royalty or other compensation to such Debtor) to use, license or sublicense following and during the continuation of an Event of Default, any Intellectual Property now owned or hereafter acquired by such Debtor, and wherever the same may be located, and including in such license access to all media in which any of the licensed items may be recorded or stored and to all computer software and programs used for the compilation or printout thereof.

9. **Applications of Proceeds**. The proceeds of any such sale, lease or other disposition of the Collateral hereunder or from payments made on account of any insurance policy insuring any portion of the Collateral shall be applied first, to the expenses of retaking, holding, storing, processing and preparing for sale, selling, and the like (including, without limitation, any taxes, fees and other costs incurred in connection therewith) of the Collateral, to the reasonable and documented attorneys' fees and expenses incurred by the Collateral Agent in enforcing the Secured Parties' rights hereunder and in connection with collecting, storing and disposing of the Collateral, and then to satisfaction of the Obligations pro rata among the Secured Parties (based on then-outstanding principal amounts of Debentures at the time of any such determination), and to the payment of any other amounts required by applicable law, after which the Secured Parties shall pay to the applicable Debtor any surplus proceeds. If, upon the sale, license or other disposition of the Collateral, the proceeds thereof are insufficient to pay all amounts to which the Secured Parties are legally entitled, the Debtors will be liable for the deficiency, together with interest thereon, at the rate of 9% per annum or the lesser amount permitted by applicable law (the "Default Rate"), and the reasonable fees of any attorneys employed by the Secured Parties to collect such deficiency. To the extent permitted by

applicable law, each Debtor waives all claims, damages and demands against the Secured Parties arising out of the repossession, removal, retention or sale of the Collateral, unless due solely to the gross negligence or willful misconduct of the Secured Parties as determined by a final judgment (not subject to further appeal) of a court of competent jurisdiction.

10. **Securities Law Provision**. Each Debtor recognizes that Collateral Agent may be limited in its ability to effect a sale to the public of all or part of the Pledged Securities by reason of certain prohibitions in the Securities Act of 1933, as amended, or other federal or state securities laws (collectively, the "Securities Laws"), and may be compelled to resort to one or more sales to a restricted group of purchasers who may be required to agree to acquire the Pledged Securities for their own account, for investment and not with a view to the distribution or resale thereof. Each Debtor agrees that sales so made may be at prices and on terms less favorable than if the Pledged Securities were sold to the public, and that Collateral Agent has no obligation to delay the sale of any Pledged Securities for the period of time necessary to register the Pledged Securities for sale to the public under the Securities Laws. Each Debtor shall cooperate with Collateral Agent in its attempt to satisfy any requirements under the Securities Laws (including, without limitation, registration thereunder if requested by Collateral Agent) applicable to the sale of the Pledged Securities by Collateral Agent.

11. **Costs and Expenses**. Each Debtor agrees to pay all reasonable out-of-pocket fees, costs and expenses incurred in connection with any filing required hereunder, including without limitation, any financing statements pursuant to the UCC, continuation statements, partial releases and/or termination statements related thereto or any expenses of any searches reasonably required by the Collateral Agent. The Debtors will also, within 15 days of receipt of a reasonably detailed invoice thereof, pay to the Collateral Agent the amount of any and all reasonable and documented out-of-pocket expenses, including the reasonable and documented fees and expenses of its counsel, which the Collateral Agent, for the benefit of the Secured Parties, may incur in connection with the creation, perfection, protection, satisfaction, foreclosure, collection or enforcement of the Security Interest and the preparation, administration, continuance, amendment or enforcement of this Agreement and pay to the Collateral Agent the amount of any and all reasonable and documented out-of-pocket expenses, including the reasonable and documented fees and expenses of its counsel, which the Collateral Agent, for the benefit of the Secured Parties, may incur in connection with (i) the enforcement of this Agreement, (ii) the custody or preservation of, or the sale of, collection from, or other realization upon, any of the Collateral, or (iii) the exercise or enforcement of any of the rights of the Secured Parties under the Debentures. The Company's obligation to reimburse the Collateral Agent for any such fees, costs and expenses incurred in connection with the Closing shall be limited to the amount that the Company has agreed to pay as set forth in Section 5.2 of the Securities Purchase Agreement. Until so paid, any fees payable hereunder shall be added to the principal amount of the Debentures and shall bear interest at the Default Rate.

12. **Responsibility for Collateral**. The Debtors assume all liabilities and responsibility in connection with all Collateral, and the Obligations shall in no way be affected or diminished by reason of the loss, destruction, damage or theft of any of the Collateral or its unavailability for any reason. Without limiting the generality of the foregoing, (a) neither the Collateral Agent nor any Secured Party (i) has any duty (either before or after an Event of

Default) to collect any amounts in respect of the Collateral or to preserve any rights relating to the Collateral, or (ii) has any obligation to clean-up or otherwise prepare the Collateral for sale, and (b) each Debtor shall remain obligated and liable under each contract or agreement included in the Collateral to be observed or performed by such Debtor thereunder. Neither the Collateral Agent nor any Secured Party shall have any obligation or liability under any such contract or agreement by reason of or arising out of this Agreement or the receipt by the Collateral Agent or any Secured Party of any payment relating to any of the Collateral, nor shall the Collateral Agent or any Secured Party be obligated in any manner to perform any of the obligations of any Debtor under or pursuant to any such contract or agreement, to make inquiry as to the nature or sufficiency of any payment received by the Collateral Agent or any Secured Party in respect of the Collateral or as to the sufficiency of any performance by any party under any such contract or agreement, to present or file any claim, to take any action to enforce any performance or to collect the payment of any amounts which may have been assigned to the Collateral Agent or to which the Collateral Agent or any Secured Party may be entitled at any time or times.

13. **Security Interests Absolute**. All rights of the Secured Parties and all obligations of the Debtors hereunder, shall be absolute and unconditional, irrespective of: (a) any lack of validity or enforceability of this Agreement, the Debentures or any agreement entered into in connection with the foregoing, or any portion hereof or thereof; (b) any change in the time, manner or place of payment or performance of, or in any other term of, all or any of the Obligations, or any other amendment or waiver of or any consent to any departure from the Debentures or any other agreement entered into in connection with the foregoing; (c) any exchange, release or nonperfection of any of the Collateral, or any release or amendment or waiver of or consent to departure from any other collateral for, or any guarantee, or any other security, for all or any of the Obligations; (d) any action by the Secured Parties to obtain, adjust, settle and cancel in its sole discretion any insurance claims or matters made or arising in connection with the Collateral; or (e) any other circumstance which might otherwise constitute any legal or equitable defense available to a Debtor, or a discharge of all or any part of the Security Interests granted hereby. Until the Obligations shall have been paid and performed in full, the rights of the Collateral Agent shall continue even if the Obligations are barred for any reason, including, without limitation, the running of the statute of limitations or bankruptcy. Each Debtor expressly waives presentment, protest, notice of protest, demand, notice of nonpayment and demand for performance. In the event that at any time any transfer of any Collateral or any payment received by the Collateral Agent or the Secured Parties hereunder shall be deemed by final order of a court of competent jurisdiction to have been a voidable preference or fraudulent conveyance under the bankruptcy or insolvency laws of the United States, or shall be deemed to be otherwise due to any party other than the Secured Parties, then, in any such event, each Debtor's obligations hereunder shall survive cancellation of this Agreement, and shall not be discharged or satisfied by any prior payment thereof and/or cancellation of this Agreement, but shall remain a valid and binding obligation enforceable in accordance with the terms and provisions hereof. Each Debtor waives all right to require the Secured Parties to proceed against any other person or entity or to apply any Collateral which the Secured Parties may hold at any time, or to marshal assets, or to pursue any other remedy. Each Debtor waives any defense arising by reason of the application of the statute of limitations to any obligation secured hereby.

14. **Term of Agreement**. This Agreement and the Security Interests shall terminate on the date on which all payments under the Debentures have been indefeasibly paid in full and all other Obligations have been paid or discharged (other than inchoate indemnification obligations that have not yet been asserted and those other Obligations expressly stated to survive any termination); provided, however, that all indemnities of the Debtors contained in this Agreement (including, without limitation, Annex B hereto) shall survive and remain operative and in full force and effect regardless of the termination of this Agreement. The Collateral Agent is hereby irrevocably authorized by each of the Secured Parties, and the Collateral Agent hereby agrees upon the request of the Company, to (a) release any lien covering any Collateral that is disposed of in accordance with the terms and conditions of the Debentures, (b) release or subordinate any lien on Collateral consisting of goods financed with purchase money indebtedness or under a capital lease to the extent such purchase money indebtedness or capitalized lease obligation, and the lien securing the same, are permitted by Section 7(a) and 7(b) of the Debentures or which has otherwise been consented to in accordance with the Debentures, (c) release any lien on any property that becomes an Excluded Property and (d) release liens on the Collateral following the Obligations having been paid or discharged (other than inchoate indemnification obligations that have not yet been asserted and those other Obligations expressly stated to survive any termination). The Collateral Agent is hereby irrevocably authorized by each of the Secured Parties, and the Collateral Agent hereby agrees (at the Debtors' expense and upon receipt of reasonable advance notice) (i) to execute and deliver to the applicable Debtor such documents as such Debtor may reasonably request to evidence the release or subordination of such item of Collateral from the liens granted under the this Agreement and (ii) to deliver to the applicable Debtor any portion of such Collateral so released that is then in possession of the Collateral Agent.

15. **Power of Attorney; Further Assurances**.

(a) Each Debtor authorizes the Collateral Agent, and does hereby make, constitute and appoint the Collateral Agent and its officers, agents, successors or assigns with full power of substitution, as such Debtor's true and lawful attorney-in-fact, with power, in the name of the Collateral Agent or such Debtor, to, after the occurrence and during the continuance of an Event of Default, (i) endorse any note, checks, drafts, money orders or other instruments of payment (including payments payable under or in respect of any policy of insurance) in respect of the Collateral that may come into possession of the Collateral Agent; (ii) to sign and endorse any financing statement pursuant to the UCC or any invoice, freight or express bill, bill of lading, storage or warehouse receipts, drafts against debtors, assignments, verifications and notices in connection with accounts, and other documents relating to the Collateral; (iii) to pay or discharge taxes, liens, security interests or other encumbrances at any time levied or placed on or threatened against the Collateral; (iv) to demand, collect, receipt for, compromise, settle and sue for monies due in respect of the Collateral; (v) to transfer any Intellectual Property or provide licenses respecting any Intellectual Property; and (vi) generally, at the option of the Collateral Agent, and at the expense of the Debtors, at any time, or from time to time, to execute and deliver any and all documents and instruments and to do all acts and things which the Collateral Agent deems necessary to protect, preserve and realize upon the Collateral and the Security Interests granted therein in order

to effect the intent of this Agreement and the Debentures all as fully and effectually as the Debtors might or could do; and each Debtor hereby ratifies all that said attorney shall lawfully do or cause to be done by virtue hereof. This power of attorney is coupled with an interest and shall be irrevocable for the term of this Agreement and thereafter as long as any of the Obligations shall be outstanding. The designation set forth herein shall be deemed to amend and supersede any inconsistent provision in the Organizational Documents or other documents or agreements to which any Debtor is subject or to which any Debtor is a party. Without limiting the generality of the foregoing, after the occurrence and during the continuance of an Event of Default, the Collateral Agent is specifically authorized to execute and file any applications for or instruments of transfer and assignment of any patents, trademarks, copyrights or other Intellectual Property with the United States Patent and Trademark Office and the United States Copyright Office.

(b) On a continuing basis, each Debtor will make, execute, acknowledge, deliver, file and record, as the case may be, with the proper filing and recording agencies in any jurisdiction, including, without limitation, the jurisdictions indicated on Schedule C attached hereto, all such instruments, and take all such action as may reasonably be deemed necessary or advisable, or as reasonably requested by the Collateral Agent, to perfect the Security Interests granted hereunder and otherwise to carry out the intent and purposes of this Agreement, or for assuring and confirming to the Collateral Agent the grant or perfection of a perfected security interest in all the Collateral under the UCC.

(c) Each Debtor hereby irrevocably appoints the Collateral Agent as such Debtor's attorney-in-fact, with full authority in the place and instead of such Debtor and in the name of such Debtor, from time to time in the Collateral Agent's discretion, to take any action and execute any instrument which the Collateral Agent may deem necessary or advisable in connection with the filing, in its sole discretion, of one or more financing or continuation statements and amendments thereto, relative to any of the Collateral without the signature of such Debtor where permitted by law, which financing statements may (but need not) describe the Collateral as "all assets" or "all personal property" or words of like import, and ratifies all such actions taken by the Collateral Agent. This power of attorney is coupled with an interest and shall be irrevocable for the term of this Agreement and thereafter as long as any of the Obligations shall be outstanding.

16. **Notices**. All notices, requests, demands and other communications hereunder shall be subject to the notice provision of the Purchase Agreement.

17. **Other Security**. To the extent that the Obligations are now or hereafter secured by property other than the Collateral or by the guarantee, endorsement or property of any other person, firm, corporation or other entity, then the Collateral Agent shall have the right, in its sole discretion, to pursue, relinquish, subordinate, modify or take any other action with respect thereto, without in any way modifying or affecting any of the Secured Parties' rights and remedies hereunder.

18. **Appointment of Collateral Agent**. The Secured Parties hereby appoint 3i, L.P. to act as their agent ("3i" or "Collateral Agent") for purposes of holding the Security Interest

granted hereunder on behalf of the Secured Parties and exercising any and all rights and remedies of the Secured Parties hereunder. Such appointment shall continue until revoked in writing by a Majority in Interest, at which time a Majority in Interest shall appoint a new Collateral Agent with the consent of the Company (such consent not to be unreasonably withheld), provided that 3i may not be removed as Collateral Agent unless 3i shall then hold less than $100,000 in principal amount of Debentures; provided, further, that such removal may occur only if each of the other Secured Parties shall then hold not less than an aggregate of $500,000 in principal amount of Debentures. The Collateral Agent shall have the rights, responsibilities and immunities set forth in Annex B hereto.

19. **Miscellaneous**.

(a) No course of dealing between the Debtors and the Secured Parties, nor any failure to exercise, nor any delay in exercising, on the part of the Secured Parties, any right, power or privilege hereunder or under the Debentures shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

(b) All of the rights and remedies of the Secured Parties with respect to the Collateral, whether established hereby or by the Debentures or by any other agreements, instruments or documents or by law shall be cumulative and may be exercised singly or concurrently.

(c) This Agreement, together with the exhibits and schedules hereto, contain the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into this Agreement and the exhibits and schedules hereto. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Debtors and the Secured Parties holding a majority or more of the principal amount of Debentures then outstanding, or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought.

(d) If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

(e) No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right.

(f) This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Debtors may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Secured Party (other than by merger). Any Secured Party may assign any or all of its rights under this Agreement to any Person to whom such Secured Party assigns or transfers any Obligations, provided such transferee agrees in writing to be bound, with respect to the transferred Obligations, by the provisions of this Agreement that apply to the "Secured Parties." The Collateral Agent may assign any or all of its rights under this Agreement to any Person appointed as "Collateral Agent" in accordance with the terms hereof.

(g) Each party shall take such further action and execute and deliver such further documents as may be necessary or appropriate in order to carry out the provisions and purposes of this Agreement.

(h) Except to the extent mandatorily governed by the jurisdiction or situs where the Collateral is located, all questions concerning the construction, validity, enforcement and interpretation of this Agreement shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Except to the extent mandatorily governed by the jurisdiction or situs where the Collateral is located, each Debtor agrees that all proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and the Debentures (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York, Borough of Manhattan. Except to the extent mandatorily governed by the jurisdiction or situs where the Collateral is located, each Debtor hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such proceeding is improper. Each party hereto hereby irrevocably waives personal service of process and consents to process being served in any such proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law. Each party hereto hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to

trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

(i) This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and, all of which taken together shall constitute one and the same Agreement. In the event that any signature is delivered by facsimile transmission, such signature shall create a valid binding obligation of the party executing (or on whose behalf such signature is executed) the same with the same force and effect as if such facsimile signature were the original thereof.

(j) All Debtors shall jointly and severally be liable for the obligations of each Debtor to the Secured Parties hereunder.

(k) Subject to the provisions of this paragraph (k), each Debtor shall indemnify, reimburse and hold harmless the Collateral Agent and the Secured Parties and their respective partners, members, shareholders, officers, directors, employees and agents (and any other persons with other titles that have similar functions) (collectively, "Indemnitees") from and against any and all losses, claims, liabilities, damages, penalties, suits, reasonable and documented costs and expenses, of any kind or nature, (including fees relating to the cost of investigating and defending any of the foregoing) imposed on, incurred by or asserted against such Indemnitee in any way related to or arising from or alleged to arise from this Agreement or the Collateral, except any such losses, claims, liabilities, damages, penalties, suits, costs and expenses which result from the fraud, gross negligence or willful misconduct of the Indemnitee as determined by a final, nonappealable decision of a court of competent jurisdiction. If any action shall be brought against any Indemnitee in respect of which indemnity may be sought pursuant to this Agreement, such Indemnitee shall promptly notify the Debtors in writing, and the Debtors shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to such Indemnitee. Any Indemnitee shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnitee except to the extent that (i) the employment thereof has been specifically authorized by the Debtors in writing, (ii) the Debtors have failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel, a material conflict on any material issue between the position of the Debtors and the position of such Indemnitee, in which case the Debtors shall be responsible for the reasonable, actual and documented out-of-pocket fees and expenses of no more than one such separate counsel. The Debtors will not be liable to any Indemnitee under this Agreement for any settlement by an Indemnitee effected without the Debtors' prior written consent, which shall not be unreasonably withheld or delayed. The indemnification required by this paragraph (k) shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or are incurred. This indemnification provision is in addition to, and not in limitation of, any other indemnification provision in the Debentures, the Purchase Agreement or any other agreement, instrument or other document executed or delivered in connection herewith or therewith. The parties agree that the losses, claims,

damages, penalties, judgments, liabilities, costs and expenses to be reimbursed or indemnified by the Debtors hereunder shall not include (i) allocated costs of in-house legal counsel, (ii) absent a direct conflict of interest, or in the reasonable determination by the Collateral Agent that the interests of the Collateral Agent and the Secured Parties would not be adequately represented without separate legal counsel, reasonable out-of-pocket fees and expenses of more than a single legal counsel to the Collateral Agent, the Secured Parties and the other Indemnitees (taken together) in each relevant jurisdiction and (iii) expenses relating to disputes solely between or among the Collateral Agent, the Secured Parties and the other Indemnitees or disputes solely between or among the Collateral Agent, the Secured Parties and the other Indemnitees and their respective affiliates (other than disputes between or among the Collateral Agent (in its capacity as such) on the one hand, and one or more Secured Parties, or one or more of their affiliates, on the other hand).

(l) Nothing in this Agreement shall be construed to subject Collateral Agent or any Secured Party to liability as a partner in any Debtor or any if its direct or indirect subsidiaries that is a partnership or as a member in any Debtor or any of its direct or indirect subsidiaries that is a limited liability company, nor shall Collateral Agent or any Secured Party be deemed to have assumed any obligations under any partnership agreement or limited liability company agreement, as applicable, of any such Debtor or any of its direct or indirect subsidiaries or otherwise, unless and until any such Secured Party exercises its right to be substituted for such Debtor as a partner or member, as applicable, pursuant hereto.

(m) To the extent that the grant of the security interest in the Collateral and the enforcement of the terms hereof require the consent, approval or action of any partner or member, as applicable, of any Debtor or any direct or indirect subsidiary of any Debtor or compliance with any provisions of any of the Organizational Documents, the Debtors hereby grant such consent and approval and waive any such noncompliance with the terms of said documents.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Security Agreement to be duly executed on the day and year first above written.

VACCINEX, INC.

By:/s/ Maurice Zauderer, Ph.D.
Name: Maurice Zauderer, Ph.D.
Title: President and Chief Executive Officer

3I, L.P., as Collateral Agent

By:/s/ Maier Tarlow
Name: Maier Tarlow
Title: Manager on behalf of the General Partner

[SIGNATURE PAGE OF HOLDERS FOLLOWS]

Name of Investing Entity: 3i, LP
Signature of Authorized Signatory of Investing entity: /s/ Maier Tarlow
Name of Authorized Signatory: Maier Tarlow
Title of Authorized Signatory: Manager on behalf of the General Partner

[SIGNATURE PAGE OF HOLDERS FOLLOWS]

ANNEX A
to
SECURITY
AGREEMENT

FORM OF ADDITIONAL DEBTOR JOINDER

Security Agreement dated as of July 31, 2020 made by
Vaccinex, Inc.
and the Additional Debtors party thereto from time to time, as Debtors
to and in favor of
the Collateral Agent (as amended, restated or otherwise modified from time to time, the "Security Agreement")

Reference is made to the Security Agreement as defined above; capitalized terms used herein and not otherwise defined herein shall have the meanings given to such terms in, or by reference in, the Security Agreement.

The undersigned hereby agrees that upon delivery of this Additional Debtor Joinder to the Collateral Agent referred to above, the undersigned shall (a) be an Additional Debtor under the Security Agreement, (b) have all the rights and obligations of the Debtors under the Security Agreement as fully and to the same extent as if the undersigned was an original signatory thereto and (c) be deemed to have made the representations and warranties set forth therein solely as to itself as of the date of execution and delivery of this Additional Debtor Joinder. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, THE UNDERSIGNED SPECIFICALLY GRANTS TO THE COLLATERAL AGENT A SECURITY INTEREST IN THE COLLATERAL AS MORE FULLY SET FORTH IN THE SECURITY AGREEMENT AND ACKNOWLEDGES AND AGREES TO THE WAIVER OF JURY TRIAL PROVISIONS SET FORTH THEREIN.

Attached hereto are supplemental and/or replacement Schedules to the Security Agreement, as applicable.

An executed copy of this Joinder shall be delivered to the Collateral Agent, and the Secured Parties may rely on the matters set forth herein on or after the date hereof. This Joinder shall only be modified, amended or terminated in accordance with the terms of the Security Agreement.

IN WITNESS WHEREOF, the undersigned has caused this Joinder to be executed in the name and on behalf of the undersigned.

[Name of Additional Debtor]

By:
Name:
Title:

Address:

Dated:

ANNEX B
to
SECURITY
AGREEMENT

THE COLLATERAL AGENT

1. **Appointment**. The Secured Parties (all capitalized terms used herein and not otherwise defined shall have the respective meanings provided in the Security Agreement to which this Annex B is attached (the "Agreement")), by their acceptance of the benefits of the Agreement, hereby designate 3i, L.P. ("3i" or "Collateral Agent") as the Collateral Agent to act as specified herein and in the Agreement. Each Secured Party shall be deemed irrevocably to authorize the Collateral Agent to take such action on its behalf under the provisions of the Agreement and any other Transaction Document and to exercise such powers and to perform such duties hereunder and thereunder as are specifically delegated to or required of the Collateral Agent by the terms hereof and thereof and such other powers as are reasonably incidental thereto. The Collateral Agent may perform any of its duties hereunder by or through its agents or employees.

2. **Nature of Duties**. The Collateral Agent shall have no duties or responsibilities except those expressly set forth in the Agreement. Neither the Collateral Agent nor any of its partners, members, shareholders, officers, directors, employees or agents shall be liable to the Secured Parties for any action taken or omitted by it as such under the Agreement or hereunder or in connection herewith or therewith, be responsible for the consequence of any oversight or error of judgment or answerable for any loss, unless caused solely by its or their gross negligence or willful misconduct as determined by a final judgment (not subject to further appeal) of a court of competent jurisdiction. The duties of the Collateral Agent shall be mechanical and administrative in nature; the Collateral Agent shall not have by reason of the Agreement or any other Transaction Document a fiduciary relationship in respect of any Debtor or any Secured Party; and nothing in the Agreement or any other Transaction Document, expressed or implied, is intended to or shall be so construed as to impose upon the Collateral Agent any obligations in respect of the Agreement or any other Transaction Document except as expressly set forth herein and therein.

3. **Lack of Reliance on the Collateral Agent**. Independently and without reliance upon the Collateral Agent, each Secured Party, to the extent it deems appropriate, has made and shall continue to make (i) its own independent investigation of the financial condition and affairs of the Company and its subsidiaries in connection with such Secured Party's investment in the Debtors, the creation and continuance of the Obligations, the transactions contemplated by the Transaction Documents, and the taking or not taking of any action in connection therewith, and (ii) its own appraisal of the creditworthiness of the Company and its subsidiaries, and of the value of the Collateral from time to time, and the Collateral Agent shall have no duty or responsibility, either initially or on a continuing basis, to provide any Secured Party with any credit, market or other information with respect thereto, whether coming into its possession before any

Obligations are incurred or at any time or times thereafter. The Collateral Agent shall not be responsible to the Debtors or any Secured Party for any recitals, statements, information, representations or warranties herein or in any document, certificate or other writing delivered in connection herewith, or for the execution, effectiveness, genuineness, validity, enforceability, perfection, collectibility, priority or sufficiency of the Agreement or any other Transaction Document, or for the financial condition of the Debtors or the value of any of the Collateral, or be required to make any inquiry concerning either the performance or observance of any of the terms, provisions or conditions of the Agreement or any other Transaction Document, or the financial condition of the Debtors, or the value of any of the Collateral, or the existence or possible existence of any default or Event of Default under the Agreement, the Debentures or any of the other Transaction Documents.

4. **Certain Rights of the Collateral Agent**. The Collateral Agent shall have the right to take any action with respect to the Collateral, on behalf of all of the Secured Parties. To the extent practical, the Collateral Agent shall request instructions from the Secured Parties with respect to any material act or action (including failure to act) in connection with the Agreement or any other Transaction Document, and shall be entitled to act or refrain from acting in accordance with the instructions of a Majority in Interest; if such instructions are not provided despite the Collateral Agent's request therefor, the Collateral Agent shall be entitled to refrain from such act or taking such action, and if such action is taken, shall be entitled to appropriate indemnification from the Secured Parties in respect of actions to be taken by the Collateral Agent; and the Collateral Agent shall not incur liability to any person or entity by reason of so refraining. Without limiting the foregoing, (a) no Secured Party shall have any right of action whatsoever against the Collateral Agent as a result of the Collateral Agent acting or refraining from acting hereunder in accordance with the terms of the Agreement or any other Transaction Document, and the Debtors shall have no right to question or challenge the authority of, or the instructions given to, the Collateral Agent pursuant to the foregoing and (b) the Collateral Agent shall not be required to take any action which the Collateral Agent believes (i) could reasonably be expected to expose it to personal liability or (ii) is contrary to this Agreement, the Transaction Documents or applicable law.

5. **Reliance**. The Collateral Agent shall be entitled to rely, and shall be fully protected in relying, upon any writing, resolution, notice, statement, certificate, telex, teletype or telecopier message, cablegram, radiogram, order or other document or telephone message signed, sent or made by the proper person or entity, and, with respect to all legal matters pertaining to the Agreement and the other Transaction Documents and its duties thereunder, upon advice of counsel selected by it and upon all other matters pertaining to this Agreement and the other Transaction Documents and its duties thereunder, upon advice of other experts selected by it. Anything to the contrary notwithstanding, the Collateral Agent shall have no obligation whatsoever to any Secured Party to assure that the Collateral exists or is owned by the Debtors or is cared for, protected or insured or that the liens granted pursuant to the Agreement have been

properly or sufficiently or lawfully created, perfected, or enforced or are entitled to any particular priority.

6. **Indemnification**. To the extent that the Collateral Agent is not reimbursed and indemnified by the Debtors, the Secured Parties will jointly and severally reimburse and indemnify the Collateral Agent, in proportion to their initially purchased respective principal amounts of Debentures, from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind or nature whatsoever which may be imposed on, incurred by or asserted against the Collateral Agent in performing its duties hereunder or under the Agreement or any other Transaction Document, or in any way relating to or arising out of the Agreement or any other Transaction Document except for those determined by a final judgment (not subject to further appeal) of a court of competent jurisdiction to have resulted solely from the Collateral Agent's own gross negligence or willful misconduct. Prior to taking any action hereunder as Collateral Agent, the Collateral Agent may require each Secured Party to deposit with it sufficient sums as it determines in good faith is necessary to protect the Collateral Agent for costs and expenses associated with taking such action.

7. **Resignation by the Collateral Agent.**

(a) The Collateral Agent may resign from the performance of all its functions and duties under the Agreement and the other Transaction Documents at any time by giving 30 days' prior written notice (as provided in the Agreement) to the Debtors and the Secured Parties. Such resignation shall take effect upon the appointment of a successor Collateral Agent pursuant to clauses (b) and (c) below.

(b) Upon any such notice of resignation, the Secured Parties, acting by a Majority in Interest, shall appoint a successor Collateral Agent hereunder with, unless an Event of Default has occurred and is continuing, the consent of the Company (which consent shall not be unreasonably withheld or delayed).

(c) If a successor Collateral Agent shall not have been so appointed within said 30-day period, the Collateral Agent shall then appoint a successor Collateral Agent who shall serve as Collateral Agent until such time, if any, as the Secured Parties appoint a successor Collateral Agent as provided above. If a successor Collateral Agent has not been appointed within such 30-day period, the Collateral Agent may petition any court of competent jurisdiction or may interplead the Debtors and the Secured Parties in a proceeding for the appointment of a successor Collateral Agent, and all fees, including, but not limited to, extraordinary fees associated with the filing of interpleader and expenses associated therewith, shall be payable by the Debtors on demand.

8. **Rights with respect to Collateral**. Each Secured Party agrees with all other Secured Parties and the Collateral Agent (i) that it shall not, and shall not attempt

to, exercise any rights with respect to its security interest in the Collateral, whether pursuant to any other agreement or otherwise (other than pursuant to this Agreement), or take or institute any action against the Collateral Agent or any of the other Secured Parties in respect of the Collateral or its rights hereunder (other than any such action arising from the breach of this Agreement) and (ii) that such Secured Party has no other rights with respect to the Collateral other than as set forth in this Agreement and the other Transaction Documents. Upon the acceptance of any appointment as Collateral Agent hereunder by a successor Collateral Agent, such successor Collateral Agent shall thereupon succeed to and become vested with all the rights, powers, privileges and duties of the retiring Collateral Agent and the retiring Collateral Agent shall be discharged from its duties and obligations under the Agreement. After any retiring Collateral Agent's resignation or removal hereunder as Collateral Agent, the provisions of the Agreement including this Annex B shall inure to its benefit as to any actions taken or omitted to be taken by it while it was Collateral Agent.

Exhibit 31.1

Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Maurice Zauderer, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the three months ended June 30, 2020 of Vaccinex, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 14, 2020

By: /s/ Maurice Zauderer

Maurice Zauderer, Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Scott E. Royer, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the three months ended June 30, 2020 of Vaccinex, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 14, 2020

By: /s/ Scott E. Royer

Scott E. Royer
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the quarterly report of Vaccinex, Inc., (the "Company") on Form 10-Q for the three months ended June 30, 2020 (the "Report"), I, Maurice Zauderer, Ph.D., President and Chief Executive Officer of the Company and Scott E. Royer, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 14, 2020

By: /s/ Maurice Zauderer

Maurice Zauderer, Ph.D.

President and Chief Executive Officer

Dated: August 14, 2020

By: /s/ Scott E. Royer

Scott E. Royer

Chief Financial Officer