

**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 March 31, 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: 000-29089

Agenus Inc.

(exact name of registrant as specified in its charter)

Delaware
*(State or other jurisdiction of
incorporation or organization)*

06-1562417
*(I.R.S. Employer
Identification No.)*

3 Forbes Road, Lexington, Massachusetts 02421
(Address of principal executive offices, including zip code)

Registrant's telephone number, including area code:
(781) 674-4400

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common stock, par value \$0.01	AGEN	The 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, 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	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

Number of shares outstanding of the issuer's Common Stock as of May 7, 2020: 169,776,816 shares

Agenus Inc.
Three Months Ended March 31, 2020
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Item 1. Financial Statements

AGENUS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(Amounts in thousands, except share and per share amounts)

	March 31, 2020 (unaudited)	December 31, 2019
ASSETS		
Cash and cash equivalents	\$ 92,284	\$ 61,808
Accounts receivable	2,643	16,293
Prepaid expenses	6,929	7,420
Other current assets	918	1,015
Total current assets	102,774	86,536
Property, plant and equipment, net of accumulated amortization and depreciation of \$43,889 and \$42,861 at March 31, 2020 and December 31, 2019, respectively	28,211	26,326
Operating lease right-of-use assets	14,319	7,364
Goodwill	23,264	23,188
Acquired intangible assets, net of accumulated amortization of \$9,923 and \$9,431 at March 31, 2020 and December 31, 2019, respectively	10,047	10,504
Other long-term assets	1,440	1,417
Total assets	<u>\$ 180,055</u>	<u>\$ 155,335</u>
LIABILITIES, CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT		
Current portion, long-term debt	\$ 646	\$ 646
Current portion, liability related to sale of future royalties and milestones	52,671	45,961
Current portion, deferred revenue	34,222	29,174
Current portion, operating lease liabilities	1,506	1,347
Accounts payable	14,752	13,564
Accrued liabilities	22,775	31,332
Other current liabilities	770	185
Total current liabilities	127,342	122,209
Long-term debt, net of current portion	12,584	13,380
Liability related to sale of future royalties and milestones, net of current portion	169,256	175,408
Deferred revenue, net of current portion	20,779	27,705
Operating lease liabilities, net of current portion	14,722	8,020
Contingent purchase price considerations	4,459	8,843
Other long-term liabilities	6,496	4,190
Commitments and contingencies		
CONVERTIBLE PREFERRED STOCK		
Preferred stock, par value \$0.01 per share; 5,000,000 shares authorized:		
Series C-1 convertible preferred stock; 12,459 shares designated, issued, and outstanding at March 31, 2020 and December 31, 2019	26,917	26,917
STOCKHOLDERS' DEFICIT		
Series A-1 convertible preferred stock; 31,620 shares designated, issued, and outstanding at March 31, 2020 and December 31, 2019; liquidation value of \$33,092 at March 31, 2020	0	0
Common stock, par value \$0.01 per share; 400,000,000 shares authorized; 163,304,257 and 137,818,068 shares issued at March 31, 2020 and December 31, 2019, respectively	1,633	1,378
Additional paid-in capital	1,132,209	1,059,583
Accumulated other comprehensive loss	(97)	(1,324)
Accumulated deficit	<u>(1,329,667)</u>	<u>(1,284,993)</u>

Total stockholders' deficit attributable to Agenus Inc.	(195,922)	(225,356)
Non-controlling interest	(6,578)	(5,981)
Total stockholders' deficit	(202,500)	(231,337)
Total liabilities, convertible preferred stock and stockholders' deficit	<u>\$ 180,055</u>	<u>\$ 155,335</u>

See accompanying notes to unaudited condensed consolidated financial statements.

AGENUS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(Unaudited)
(Amounts in thousands, except per share amounts)

	Three Months Ended March 30,	
	2020	2019
Revenue:		
Research and development	\$ 1,928	\$ 70,871
Other revenue	44	415
Non-cash royalty revenue related to the sale of future royalties	13,156	8,605
Total revenues	15,128	79,891
Operating expenses:		
Research and development	(36,363)	(40,130)
General and administrative	(10,613)	(10,805)
Contingent purchase price consideration fair value adjustment	4,384	(2,748)
Operating (loss) income	(27,464)	26,208
Other expense:		
Loss on modification of debt	(2,720)	—
Non-operating (expense) income	(1,052)	370
Interest expense, net	(14,035)	(9,143)
Net (loss) income	(45,271)	17,435
Dividends on Series A-1 convertible preferred stock	(52)	(52)
Less: net loss attributable to non-controlling interest	(597)	(1,071)
Net (loss) income attributable to Agenus Inc. common stockholders	\$ (44,726)	\$ 18,454
Per common share data:		
Basic net (loss) income attributable to Agenus Inc. common stockholders	\$ (0.31)	\$ 0.14
Diluted net (loss) income attributable to Agenus Inc. common stockholders	(0.31)	0.12
Weighted average number of Agenus Inc. common shares outstanding:		
Basic	145,061	129,700
Diluted	145,061	148,590
Other comprehensive (loss) income:		
Foreign currency translation (loss) gain	\$ 1,227	\$ (682)
Other comprehensive (loss) income	1,227	(682)
Comprehensive (loss) income	\$ (43,499)	\$ 17,772

See accompanying notes to unaudited condensed consolidated financial statements.

AGENUS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT
(Unaudited)
(Amounts in thousands)

	Series C-1 Convertible Preferred Stock		Series A-1 Convertible Preferred Stock		Common Stock			Accumulated Other Comprehensive Income (Loss)	Non- controlling Interest	Accumulated Deficit	Total
	Number of Shares	Amount	Number of Shares	Par Value	Number of Shares	Par Value	Additional Paid-In Capital				
Balance at December 31, 2019	12	\$ 26,917	32	\$ 0	137,819	\$ 1,378	\$ 1,059,583	\$ (1,324)	\$ (5,981)	\$ (1,284,993)	\$ (231,337)
Net loss	—	—	—	—	—	—	—	—	(597)	(44,674)	(45,271)
Other comprehensive income	—	—	—	—	—	—	—	1,227	—	—	1,227
Share-based compensation	—	—	—	—	—	—	2,397	—	—	—	2,397
Shares sold at the market	—	—	—	—	24,716	247	64,876	—	—	—	65,123
Amendment of 2015 warrants and issuance of 2020 warrants	—	—	—	—	—	—	3,145	—	—	—	3,145
Payment of consultant in shares	—	—	—	—	4	0	12	—	—	—	12
Exercise of stock options and employee share purchases	—	—	—	—	765	8	2,196	—	—	—	2,204
Balance at March 31, 2020	<u>12</u>	<u>\$ 26,917</u>	<u>32</u>	<u>\$ 0</u>	<u>163,304</u>	<u>\$ 1,633</u>	<u>\$ 1,132,209</u>	<u>\$ (97)</u>	<u>\$ (6,578)</u>	<u>\$ (1,329,667)</u>	<u>\$ (202,500)</u>

AGENUS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT
(Unaudited)
(Amounts in thousands)

	Series C-1 Convertible Preferred Stock		Series A-1 Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Non- controlling Interest	Accumulated Deficit	Total
	Number of Shares	Amount	Number of Shares	Par Value	Number of Shares	Par Value					
Balance at December 31, 2018	18	\$ 39,879	32	\$ 0	119,996	\$ 1,200	\$ 1,005,183	\$ (1,539)	\$ (2,078)	\$ (1,177,311)	\$ (174,545)
Net income (loss)	—	—	—	—	—	—	—	—	(1,071)	18,506	17,435
Other comprehensive loss	—	—	—	—	—	—	—	(682)	—	—	(682)
Adoption of ASC 842	—	—	—	—	—	—	—	—	—	(25)	(25)
Share-based compensation	—	—	—	—	—	—	1,843	—	—	—	1,843
Shares sold under stock purchase agreement	—	—	—	—	11,111	111	29,889	—	—	—	30,000
Conversion of Series C-1 convertible preferred stock	(3)	(6,481)	—	—	3,000	30	6,451	—	—	—	6,481
Payment of consultant in shares	—	—	—	—	14	0	37	—	—	—	37
Exercise of stock options and employee share purchases	—	—	—	—	85	1	172	—	—	—	173
Balance at March 31, 2019	<u>15</u>	<u>\$ 33,398</u>	<u>32</u>	<u>\$ 0</u>	<u>134,206</u>	<u>\$ 1,342</u>	<u>\$ 1,043,575</u>	<u>\$ (2,221)</u>	<u>\$ (3,149)</u>	<u>\$ (1,158,830)</u>	<u>\$ (119,283)</u>

See accompanying notes to unaudited condensed consolidated financial statements.

AGENUS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
(Amounts in thousands)

	Three Months Ended March 31,	
	2020	2019
Cash flows from operating activities:		
Net (loss) income	\$ (45,271)	\$ 17,435
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,700	1,640
Share-based compensation	2,397	1,843
Non-cash royalty revenue	(13,156)	(8,605)
Non-cash interest expense	13,844	9,428
Change in fair value of contingent obligations	(4,384)	2,748
Loss on modification of debt	2,720	—
Changes in operating assets and liabilities:		
Accounts receivable	13,649	142
Prepaid expenses	465	1,141
Accounts payable	1,190	(860)
Deferred revenue	(1,875)	56,628
Accrued liabilities and other current liabilities	(8,471)	(2,605)
Other operating assets and liabilities	2,687	(2,348)
Net cash (used in) provided by operating activities	(34,505)	76,587
Cash flows from investing activities:		
Purchases of plant and equipment	(644)	(1,501)
Net cash used in investing activities	(644)	(1,501)
Cash flows from financing activities:		
Net proceeds from sale of equity	65,123	30,000
Proceeds from employee stock purchases and option exercises	2,204	172
Repayments of debt	(500)	—
Payment of finance lease obligation	(1,214)	(75)
Net cash provided by financing activities	65,613	30,097
Effect of exchange rate changes on cash	12	69
Net increase (decrease) in cash and cash equivalents	30,476	105,252
Cash and cash equivalents, beginning of period	61,808	53,054
Cash and cash equivalents, end of period	\$ 92,284	\$ 158,306
Supplemental cash flow information:		
Cash paid for interest	\$ 204	\$ 312
Supplemental disclosures - non-cash activities:		
Purchases of plant and equipment in accounts payable and accrued liabilities	\$ 246	\$ 173
Issuance of common stock, \$0.01 par value, in connection with payment to consultant	12	38
Lease right-of-use assets obtained in exchange for new operating lease liabilities	7,467	—
Lease right-of-use assets obtained in exchange for new finance lease liabilities	2,434	—

See accompanying notes to unaudited condensed consolidated financial statements.

Note A - Business, Liquidity and Basis of Presentation

Agenus Inc. (including its subsidiaries, collectively referred to as “Agenus,” the “Company,” “we,” “us,” and “our”) is a clinical-stage immunology (“I-O”) company advancing an extensive pipeline of immune checkpoint antibodies, adoptive cell therapies and neoantigen vaccines, to fight cancer. Our business is designed to drive success in I-O through speed, innovation and effective combination therapies. We believe that combination therapies and a deep understanding of each patient’s cancer will drive substantial expansion of the patient population benefiting from current I-O therapies. In addition to a diverse pipeline, we have assembled fully integrated end-to-end capabilities including novel target discovery, antibody generation, cell line development and good manufacturing practice (“GMP”) manufacturing. We believe that these fully integrated capabilities enable us to produce novel candidates on timelines that are shorter than the industry standard. Leveraging our science and capabilities, we have forged important partnerships to advance our innovation.

We are developing a comprehensive I-O portfolio driven by the following platforms and programs, which we intend to utilize individually and in combination:

- our multiple antibody discovery platforms, including our proprietary display technologies, designed to drive the discovery of future CPM antibody candidates;
- our antibody candidate programs, including our CPM programs;
- our vaccine programs, including Prophage™, AutoSynVax™ and PhosPhoSynVax™;
- our saponin-based vaccine adjuvants, principally our QS-21 Stimulon™ adjuvant, or QS-21 Stimulon; and
- our cell therapy subsidiary, AgenTus Therapeutics, Inc., which is designed to drive the discovery of future adoptive cell therapy, or “living drugs” (Activated, CAR-T and TCR) programs.

Our business activities include product research and development, intellectual property prosecution, manufacturing, regulatory and clinical affairs, corporate finance and development activities, and support of our collaborations. Our product candidates require clinical trials and approvals from regulatory agencies, as well as acceptance in the marketplace. Part of our strategy is to develop and commercialize some of our product candidates by continuing our existing arrangements with academic and corporate collaborators and licensees and by entering into new collaborations. As a result of the COVID-19 pandemic, we recently streamlined our operations and repurposed certain of our R&D efforts to advance product candidates for the potential treatment of COVID-19, including certain agents from our existing clinical portfolio.

Our cash and cash equivalents at March 31, 2020 were \$92.3 million, an increase of \$30.5 million from December 31, 2019.

We have incurred significant losses since our inception. As of March 31, 2020, we had an accumulated deficit of \$1.3 billion. Although we plan to launch our first commercial product in 2021, we do not expect to be profitable in 2021.

During the past five years, we have financed our operations primarily through funding from corporate partnerships and novel financing mechanisms. Based on our current plans and projections, we believe that our cash resources of \$92.3 million as of March 31, 2020, combined with proceeds from financing transactions already completed in the second quarter of 2020, will be sufficient to satisfy our liquidity requirements through the fourth quarter of 2020; we are presently in multiple partnership and out licensing discussions which, if consummated, could extend our cash resources into and beyond next year. Until we are successful in our efforts for capital infusion through these transactions or other financing options, and because the completion of such transactions is not entirely within our control, in accordance with accounting guidance we are required to disclose that substantial doubt exists about our ability to continue as a going concern for a period of one year after the date of filing of this Quarterly Report on Form 10-Q.

The financial statements do not include any adjustments that might result from the outcome of this uncertainty. Accordingly, the financial statements have been prepared on a basis that assumes we will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the ordinary course of business.

Management continues to address the Company’s liquidity position and will adjust spending as needed in order to preserve liquidity. Most recently, in response to the COVID-19 pandemic, we streamlined our organization, which included a headcount reduction and the slowing down of several non-priority programs. Our CEO, Dr. Armen, also elected to receive his base salary in stock rather than cash for the balance of 2020. We also continue to monitor the likelihood of success of our key initiatives and have a

plan to discontinue funding of such activities if they do not prove to be successful, or, if by the end of the second quarter of 2020 additional cash resources are not put into place, further restrict funding of non-core programs, restrict capital expenditures and/or reduce the scale of our operations as necessary to ensure sufficient cash resources through the fourth quarter of 2020. Our future liquidity needs will be determined primarily by the success of our operations with respect to the progression of our product candidates and key development and regulatory events in the future. Potential sources of additional funding include: (1) pursuing collaboration, out-licensing and/or partnering opportunities for our portfolio programs and product candidates with one or more third parties, (2) renegotiating third party agreements, (3) selling assets, (4) securing additional debt financing and/or (5) selling equity securities.

The accompanying unaudited interim condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”) for interim financial information and with the instructions to Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete annual consolidated financial statements. In the opinion of our management, the condensed consolidated financial statements include all normal and recurring adjustments considered necessary for a fair presentation of our financial position and operating results. All significant intercompany transactions and accounts have been eliminated in consolidation. Operating results for the three months ended March 31, 2020, are not necessarily indicative of the results that may be expected for the year ending December 31, 2020. For further information, refer to our consolidated financial statements and footnotes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the Securities and Exchange Commission on March 16, 2020.

The preparation of consolidated 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 disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Management bases its estimates on historical experience and on various assumptions that are believed to be reasonable under the circumstances. Actual results could differ materially from those estimates.

For our foreign subsidiaries, the local currency is the functional currency. Assets and liabilities of our foreign subsidiaries are translated into U.S. dollars using rates in effect at the balance sheet date while revenues and expenses are translated into U.S. dollars using average exchange rates during the period. The cumulative translation adjustment resulting from changes in exchange rates are included in the consolidated balance sheets as a component of accumulated other comprehensive loss in total stockholders’ deficit.

Note B - Net Loss Per Share

The following table sets forth the computation of basic and diluted net (loss) income per share (in thousands, except for per share data):

	Three Months Ended March 31,	
	2020	2019
Amounts used for basic and diluted per share calculations:		
Net (loss) income attributable to Agenus Inc. common stockholders	\$ (44,726)	\$ 18,454
Weighted average number of Agenus Inc. common shares outstanding - basic	145,061	129,700
Effect of potentially dilutive securities:		
Share based compensation awards	—	1,498
Series C-1 convertible preferred stock	—	17,392
Weighted average number of Agenus Inc. common shares outstanding - diluted	145,061	148,590
Net (loss) income attributable to Agenus Inc. per common share:		
Basic	\$ (0.31)	\$ 0.14
Diluted	\$ (0.31)	\$ 0.12

Basic net (loss) and income per common share is calculated by dividing the net (loss) income attributable to common stockholders by the weighted average number of common shares outstanding (including common shares issuable under our Directors’ Deferred Compensation Plan, or “DDCP”). Diluted net (loss) income per common share is calculated by dividing net (loss) income

attributable to common stockholders by the weighted average number of common shares outstanding (including common shares issuable under our DDCP) plus the dilutive effect of outstanding instruments such as warrants, stock options, non-vested shares and convertible preferred stock. Because we reported a net loss attributable to common stockholders for the quarter ended March 31, 2020, diluted loss per common share is the same as basic loss per common share, as the effect of utilizing the fully diluted share count would have reduced the net loss per common share. The following securities (listed on an as-if-converted-to-Common-Stock basis) have been excluded from the computation of diluted weighted average shares outstanding as of March 31, 2020 and 2019, as they would be anti-dilutive (in thousands):

	Three Months Ended March 31,	
	2020	2019
Warrants	2,025	1,900
Stock options	27,707	18,139
Non-vested shares	888	505
Series A-1 convertible preferred stock	333	333
Series C-1 convertible preferred stock	12,459	—

Note C - Investments

Cash equivalents consisted of the following as of March 31, 2020 and December 31, 2019 (in thousands):

	March 31, 2020		December 31, 2019	
	Cost	Estimated Fair Value	Cost	Estimated Fair Value
Institutional money market funds	\$ 69,151	\$ 69,151	\$ 55,258	\$ 55,258
U.S. Treasury Bills	14,998	14,998	—	—
Total	\$ 84,149	\$ 84,149	\$ 55,258	\$ 55,258

As a result of the short-term nature of our investments, there were minimal unrealized holding gains or losses for the three months ended March 31, 2020 and 2019.

Note D - Goodwill and Acquired Intangible Assets

The following table sets forth the changes in the carrying amount of goodwill for the three months ended March 31, 2020 (in thousands):

Balance, December 31, 2019	\$ 23,188
Foreign currency translation adjustment	76
Balance, March 31, 2020	\$ 23,264

Acquired intangible assets consisted of the following as of March 31, 2020 and December 31, 2019 (in thousands):

	Amortization period (years)	As of March 31, 2020		
		Gross carrying amount	Accumulated amortization	Net carrying amount
Intellectual property	7-15 years	\$ 16,605	\$ (8,520)	\$ 8,085
Trademarks	4.5 years	838	(838)	—
Other	2-6 years	573	(565)	8
In-process research and development	Indefinite	1,954	—	1,954
Total		\$ 19,970	\$ (9,923)	\$ 10,047

	As of December 31, 2019			
	Amortization period (years)	Gross carrying amount	Accumulated amortization	Net carrying amount
Intellectual property	7-15 years	\$ 16,584	\$ (8,044)	\$ 8,540
Trademarks	4.5 years	834	(834)	—
Other	2-6 years	572	(553)	19
In-process research and development	Indefinite	1,945	—	1,945
Total		\$ 19,935	\$ (9,431)	\$ 10,504

The weighted average amortization period of our finite-lived intangible assets is 9 years. Amortization expense related to acquired intangibles is estimated at \$1.4 million for the remainder of 2020, \$1.9 million for each of the years ending December 31, 2021 and 2022, \$1.4 million for the year ending December 31, 2023 and \$0.3 million for the year ending December 31, 2024.

Note E - Debt

Debt obligations consisted of the following as of March 31, 2020 and December 31, 2019 (in thousands):

Debt instrument	Balance at March 31, 2020
Current Portion:	
Debt instrument	
Debentures	\$ 146
2015 Subordinated Notes	500
Long-term Portion:	
2015 Subordinated Notes	12,584
Total	\$ 13,230

Debt instrument	Principal at December 31, 2019	Unamortized Debt Discount	Balance at December 31, 2019
Current Portion:			
Debt instrument			
Debentures	\$ 146	\$ —	\$ 146
2015 Subordinated Notes	500	—	500
Long-term Portion:			
2015 Subordinated Notes	13,500	(120)	13,380
Total	\$ 14,146	\$ (120)	\$ 14,026

On February 18, 2020, we entered into an amendment to the 2015 Subordinated Notes (the “Amendment”) pursuant to which we:

- extended the maturity date of \$13.5 million of the 2015 Subordinated Notes by three years from February 20, 2020 to February 20, 2023;
- repaid \$0.5 million of the 2015 Subordinated Notes;
- extended the exercise period of the warrants to purchase 1,350,000 shares of the Company’s common stock previously issued in 2015 by three years from February 20, 2020 to February 20, 2023; and
- issued new warrants to purchase 675,000 shares of the Company’s common stock with a term of five years and an exercise price of \$4.48 per share, which represented a 20% premium over the 30-day average trailing closing price of the Company’s common stock as of the date of the Amendment.

The Amendment was accounted for as a debt extinguishment under the guidance of *ASU 470: Debt*. For the three months ended March 31, 2020, we recorded a loss of approximately \$2.7 million in other expense in our condensed consolidated statements of operations and comprehensive loss, which primarily represents the fair value of the new and extended warrants. The amended 2015 Subordinated Notes were recorded at fair value. As of March 31, 2020, the principal amount of our outstanding debt balance was \$13.6 million.

In April 2020, we repaid \$0.5 million of the outstanding amended 2015 Subordinated Notes. As a result, the obligation has been classified as current in our condensed consolidated balance sheets.

Note F – Liability Related to the Sale of Future Royalties and Milestones

The following table shows the activity within the liability account in the three months ended March 31, 2020 (in thousands):

	<u>Period from December 31, 2019 to March 31, 2020</u>
Liability related to sale of future royalties and milestones - beginning balance	\$ 221,845
Non-cash royalty revenue	(13,156)
Non-cash interest expense recognized	13,699
Liability related to sale of future royalties and milestones - ending balance	<u>222,388</u>
Less: unamortized transaction costs	(461)
Liability related to sale of future royalties and milestones, net	<u>\$ 221,927</u>

Healthcare Royalty Partners

In January 2018, we, through our wholly-owned subsidiary Antigenics, LLC (“Antigenics”), entered into a Royalty Purchase Agreement (the “HCR Royalty Purchase Agreement”) with Healthcare Royalty Partners III, L.P. and certain of its subsidiaries (collectively, “HCR”). Pursuant to the terms of the HCR Royalty Purchase Agreement, we sold to HCR 100% of Antigenics’ worldwide rights to receive royalties from GlaxoSmithKline (“GSK”) on sales of GSK’s vaccines containing our QS-21 Stimulon adjuvant. At closing, we received gross proceeds of \$190.0 million from HCR. Although we sold all of our rights to receive royalties on sales of GSK’s vaccines containing QS-21, as a result of our obligation to HCR, we are required to account for these royalties as revenue when earned, and we recorded the \$190.0 million in proceeds from this transaction as a liability on our condensed consolidated balance sheet that will be amortized using the interest method over the estimated life of the HCR Royalty Purchase Agreement. The liability is classified between the current and non-current portion of liability related to sale of future royalties and milestones in the condensed consolidated balance sheets based on the estimated recognition of the royalty payments to be received by HCR in the next 12 months from the financial statement reporting date.

During the three months ended March 31, 2020, we recognized \$13.2 million of non-cash royalty revenue, and we recorded \$13.7 million of related non-cash interest expense related to the HCR Royalty Purchase Agreement.

As royalties are remitted to HCR from GSK, the balance of the recorded liability will be effectively repaid over the life of the HCR Royalty Purchase Agreement. To determine the amortization of the recorded liability, we are required to estimate the total amount of future royalty payments to be received by HCR. The sum of these amounts less the \$190.0 million proceeds we received will be recorded as interest expense over the life of the HCR Royalty Purchase Agreement. Periodically, we assess the estimated royalty payments to be paid to HCR from GSK, and to the extent the amount or timing of the payments is materially different from our original estimates, we will prospectively adjust the amortization of the liability. During the three months ended March 31, 2020, our estimate of the effective annual interest rate over the life of the agreement increased to 26.2%, which results in a retrospective interest rate of 22.2%.

Note G - Accrued Liabilities

Accrued liabilities consisted of the following as of March 31, 2020 and December 31, 2019 (in thousands):

	March 31, 2020	December 31, 2019
Payroll	\$ 4,332	\$ 9,575
Professional fees	4,114	4,314
Contract manufacturing costs	7,227	8,768
Research services	5,856	6,675
Other	1,246	2,000
Total	<u>\$ 22,775</u>	<u>\$ 31,332</u>

Note H - Fair Value Measurements

We measure our contingent purchase price considerations at fair value.

The fair values of our contingent purchase price considerations, \$4.5 million, are based on significant inputs not observable in the market, which require them to be reported as Level 3 liabilities within the fair value hierarchy. The valuation of these liabilities use assumptions we believe would be made by a market participant and are based on estimates from a Monte Carlo simulation of our market capitalization and share price, and other factors impacting the probability of triggering the milestone payments. Market capitalization and share price were evolved using a geometric Brownian motion, calculated daily for the life of the contingent purchase price considerations.

The significant unobservable inputs include the anticipated timelines to achieve the contingent purchase milestones and our estimated credit spread, the weighted average values of which (weighted based on the value of each contingent liability), as of March 31, 2020, are shown in the table below.

	Unobservable Input
Period of time to achieve milestones (in years)	2.1
Credit spread	17.2%

Liabilities measured at fair value are summarized below (in thousands):

Description	March 31, 2020	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Liabilities:				
Contingent purchase price considerations	\$ 4,459	\$ —	\$ —	\$ 4,459
Total	<u>\$ 4,459</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 4,459</u>
Description	December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Liabilities:				
Contingent purchase price consideration	\$ 8,843	\$ —	\$ —	\$ 8,843
Total	<u>\$ 8,843</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 8,843</u>

The following table presents our liabilities measured at fair value using significant unobservable inputs (Level 3), as of March 31, 2020 (in thousands):

Balance, December 31, 2019	\$	8,843
Change in fair value of contingent purchase price considerations during the period		(4,384)
Balance, March 31, 2020	\$	<u>4,459</u>

The fair value of our outstanding debt balance at March 31, 2020 and December 31, 2019 was \$13.3 million and \$14.2 million, respectively, based on the Level 2 valuation hierarchy of the fair value measurements standard using a present value methodology that was derived by evaluating the nature and terms of each note and considering the prevailing economic and market conditions at the balance sheet date. The principal amount of our outstanding debt balance at March 31, 2020 and December 31, 2019 was \$13.6 and \$14.1 million, respectively.

Note I - Revenue from Contracts with Customers

Gilead Collaboration Agreement

On December 20, 2018, we entered into a series of agreements with Gilead Sciences, Inc. (“Gilead”) focused on the development and commercialization of up to five novel immuno-oncology therapies. Pursuant to the terms of the license agreement, the option and license agreements and the stock purchase agreement we entered into with Gilead (collectively, the “Gilead Collaboration Agreements”), at the closing of the transaction on January 23, 2019 (the “Effective Date”), we received an upfront cash payment from Gilead of \$120.0 million and Gilead made a \$30.0 million equity investment in Agenus. We are also eligible to receive up to \$1.7 billion in aggregate potential milestones.

Collaboration Revenue

For the three months ended March 31, 2020, we recognized \$1.8 million of research and development revenue related to the Gilead Collaboration Agreements based on the partial satisfaction of the over time performance obligations as of quarter end. For the three months ended March 31, 2019, we recognized \$70.3 million of research and development revenue. This amount included \$4.8 million of the transaction price recognized based on the partial satisfaction of the over time performance obligations as of quarter end.

We expect to recognize deferred research and development revenue of \$26.9 million and \$27.7 million for the remainder of 2020 and 2021, respectively, related to performance obligations that are unsatisfied or partially unsatisfied as of March 31, 2020.

Incyte Collaboration Agreement

For the three months ended March 31, 2020, we recognized approximately \$0.1 million of research and development revenue for research and development services provided. For the three months ended March 31, 2019, we recognized approximately \$0.6 million of research and development revenue. This amount included \$0.2 million of the transaction price recognized based on the partial satisfaction of the over time performance obligations as of quarter end and \$0.4 million for research and development services.

Disaggregation of Revenue

The following tables present revenue (in thousands) for the three months ended March 31, 2020 and 2019, disaggregated by geographic region and revenue type. Revenue by geographic region is allocated based on the domicile of our respective business operations.

Revenue Type	Three months ended March 31, 2020		
	United States	Europe	Total
Research and development services	\$ 97	\$ —	\$ 97
Recognition of deferred revenue	1,831	—	1,831
Recognition of deferred grant revenue	—	44	44
Non-cash royalty revenue	13,156	—	13,156
	\$ 15,084	\$ 44	\$ 15,128

Revenue Type	Three months ended March 31, 2019		
	United States	Europe	Total
Research and development services	\$ 414	\$ —	\$ 414
License fee revenue	65,500	—	65,500
Recognition of deferred revenue	4,957	—	4,957
Recognition of deferred grant revenue	415	—	415
Non-cash royalty revenue	8,605	—	8,605
	\$ 79,891	\$ —	\$ 79,891

Contract Balances

Contract assets primarily relate to our rights to consideration for work completed in relation to our research and development services performed but not billed at the reporting date. The contract assets are transferred to receivables when the rights become unconditional. Currently, we do not have any contract assets which have not transferred to a receivable. We had no asset impairment charges related to contract assets in the period. The contract liabilities primarily relate to contracts where we received payments but have not yet satisfied the related performance obligations. The advance consideration received from customers for research and development services or licenses bundled with other promises is a contract liability until the underlying performance obligations are transferred to the customer.

The following table provides information about contract assets and contract liabilities from contracts with customers (in thousands):

Three months ended March 31, 2020	Balance at beginning of period	Additions	Deductions	Balance at end of period
Contract assets:				
Unbilled receivables from collaboration partners	\$ -	\$ -	\$ -	\$ -
Contract liabilities:				
Deferred revenue	\$ 56,414	\$ -	\$ (1,831)	\$ 54,583

The change in contract liabilities is primarily related to the recognition of \$1.8 million of revenue related to the Gilead Collaboration Agreements during the three months ended March 31, 2020. Deferred revenue related to the Gilead Collaboration Agreements of \$54.6 million as of March 31, 2020, which was comprised of the \$142.5 million initial transaction price, less \$87.9 million of license and collaboration revenue recognized from the effective date of the contract, will be recognized as the combined performance obligation is satisfied.

We also recorded a \$0.3 million receivable as of March 31, 2020 for research and development and manufacturing services provided.

During the three months ended March 31, 2020, we did not recognize any revenue from amounts included in the contract asset or the contract liability balances from performance obligations satisfied in previous periods. None of the costs to obtain or fulfill a contract were capitalized.

Note J - Share-based Compensation Plans

We primarily use the Black-Scholes option pricing model to value stock options granted to employees and non-employees, including stock options granted to members of our Board of Directors. However, the fair value of stock option market-based awards is calculated based on a Monte Carlo simulation as of the date of issuance. All stock options have 10-year terms and generally vest ratably over a 3 or 4-year period.

A summary of option activity for the three months ended March 31, 2020 is presented below:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at December 31, 2019	27,164,147	\$ 3.67		
Granted	2,083,300	3.53		
Exercised	(527,880)	3.05		
Forfeited	(389,882)	3.27		
Expired	(622,428)	4.46		
Outstanding at March 31, 2020	<u>27,707,257</u>	\$ 3.66	7.66	\$ 1,568,570
Vested or expected to vest at March 31, 2020	<u>27,707,257</u>	\$ 3.66	7.66	\$ 1,568,570
Exercisable at March 31, 2020	<u>13,091,335</u>	\$ 4.09	6.05	\$ 282,813

The weighted average grant-date fair values of stock options granted during the three months ended March 31, 2020 and 2019 were \$1.39 and \$1.58, respectively.

As of March 31, 2020, there was approximately \$20.1 million of total unrecognized share-based compensation expense related to these stock options which, if all milestones are achieved, will be recognized over a weighted average period of 2.2 years.

Certain employees and consultants have been granted non-vested stock. The fair value of non-vested market-based awards is calculated based on a Monte Carlo simulation as of the date of issuance. The fair value of other non-vested stock is calculated based on the closing sale price of our common stock on the date of issuance.

A summary of non-vested stock activity for the three months ended March 31, 2020 is presented below:

	Non-vested Shares	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2019	2,207,943	\$ 2.85
Granted	—	—
Vested	—	—
Forfeited	(1,320,311)	3.44
Outstanding at March 31, 2020	<u>887,632</u>	\$ 1.96

As of March 31, 2020, there was approximately \$0.8 million of unrecognized share-based compensation expense related to these non-vested shares which will be recognized over a period of 2.0 years.

During the three months ended March 31, 2020, 236,855 shares were issued under the 2019 Employee Stock Purchase Plan and 527,880 shares were issued as a result of stock option exercises.

The impact on our results of operations from share-based compensation for the three months ended March 31, 2020 and 2019, was as follows (in thousands):

	Three Months Ended March 31,	
	2020	2019
Research and development	\$ 1,203	\$ 886
General and administrative	1,194	957
Total share-based compensation expense	<u>\$ 2,397</u>	<u>\$ 1,843</u>

Note K – Leases

The majority of our operating lease agreements are for the office, research and development and manufacturing space we use to conduct our operations.

We lease space in Lexington, Massachusetts for our manufacturing, research and development, and corporate offices, office space in New York, New York for use as corporate offices, facilities in Berkeley, California, for manufacturing and corporate offices and facilities in Charlottesville, Virginia and Cambridge, United Kingdom for research and development and corporate offices. We have subleased a small portion of the space in our main Lexington facility for part of the associated head lease. These agreements expire at various times between 2020 and 2030.

We also have finance lease agreements for research and development, manufacturing and transportation equipment that expire at various times between in 2020 and 2022.

The components of lease cost recorded in our condensed consolidated statement of operations were as follows (in thousands):

	Three months ended March 31,	
	2020	2019
Operating lease cost	\$ 1,077	\$ 551
Finance lease cost	73	65
Variable lease cost	513	161
Sublease income	(144)	(140)
Net lease cost	<u>\$ 1,519</u>	<u>\$ 637</u>

Variable lease cost for the three months ended March 31, 2020 and 2019 primarily related to common area maintenance, taxes, utilities, insurance and parking associated with our operating leases. Short-term lease cost for the three months ended March 31, 2020 and 2019 was immaterial.

Cash paid for amounts included in the measurement of operating lease liabilities for the three months ended March 31, 2020 and 2019 was approximately \$0.5 million and \$0.4 million, respectively. Cash paid for amounts included in the measurement of finance lease liabilities for the three months ended March 31, 2020 was approximately \$1.2 million.

The following table presents supplemental balance sheet information related to our leases (in thousands):

	As of March 31, 2020	As of December 31, 2019
Operating Leases		
Operating lease right-of-use assets	\$ 14,319	\$ 7,364
Total operating lease right-of-use assets	14,319	7,364
Current portion, operating lease liabilities	1,506	1,347
Operating lease liabilities, net of current portion	14,722	8,020
Total operating lease liabilities	16,228	9,367
Finance Leases		
Property, plant and equipment, net	3,181	796
Total finance lease right-of-use assets	3,181	796
Other current liabilities	733	148
Other long-term liabilities	634	—
Total finance lease liabilities	\$ 1,367	\$ 148

Maturities of our lease liabilities as of March 31, 2020 were as follows (in thousands):

Year	Operating Leases	Finance leases	Expected sublease receipts	Net future lease commitments
Remainder of 2020	\$ 3,016	\$ 658	\$ (433)	\$ 3,241
2021	3,875	804		4,679
2022	3,963	67		4,030
2023	3,553			3,553
2024	2,640			2,640
Thereafter	12,368			12,368
Total	\$ 29,415	\$ 1,529	\$ (433)	\$ 30,511
Less imputed interest	(13,187)	(162)		
Present value of lease liabilities	\$ 16,228	\$ 1,367		

The weighted-average remaining lease terms and discount rates related to our operating and finance leases were as follows:

	March 31, 2020	
	Operating	Finance
Weighted average remaining lease term (in years)	7.7	1.8
Weighted average discount rate	15.9%	13.1%

Note L – Equity

At the Market Offerings

During the three months ended March 31, 2020, we received net proceeds of approximately \$65.1 million from the sale of approximately 24.7 million shares of our common stock at an average price per share of approximately \$2.72 in at-the-market offerings under our At Market Issuance Sales Agreement with B. Riley FBR, Inc.

Note M - Recent Accounting Pronouncements

Recently Issued and Adopted

In August 2018, the Financial Accounting Standards Board (“FASB”) issued ASU No. 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement (“ASU 2018-13”). The

amendments in ASU 2018-13 modify the disclosure requirements of fair value measurements. Certain disclosures are required to be applied on a retrospective basis and others on a prospective basis. We adopted the standard on January 1, 2020. The adoption did not have a material impact on our financial statement disclosures.

In November 2018, the FASB issued ASU No. 2018-18, Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606, Revenue from Contracts with Customers, (“ASC 606”) (“ASU 2018-18”). ASU 2018-18 (1) clarifies that certain transactions between collaborative arrangement participants should be accounted for under ASC 606, when the collaborative arrangement participant is a customer in the context of a unit of account, (2) adds unit-of-account guidance in ASC 808 to align with ASC 606 when an entity is assessing whether the collaborative arrangement, or a part of the arrangement, is within the scope of ASC 606, and (3) precludes presenting transactions together with revenue when those transactions involve collaborative arrangement participants that are not directly related to third parties and are not customers. We adopted the standard on January 1, 2020. The adoption did not have a material impact on our consolidated financial statements.

Recently Issued, Not Yet Adopted

In January 2017, the FASB issued ASU 2017-04, Intangibles – Goodwill and Other (Topic 350) that will eliminate the requirement to calculate the implied fair value of goodwill to measure a goodwill impairment charge. Instead, an impairment charge will be based on the excess of a reporting unit’s carrying amount over its fair value. The guidance is effective for the Company in the first quarter of fiscal 2023. Early adoption is permitted. We do not anticipate the adoption of this guidance to have a material impact on our consolidated financial statements, absent any goodwill impairment.

In December 2019, the FASB issued ASU No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes (“ASU 2019-12”). ASU 2019-12 enhances and simplifies multiple aspects of the income tax accounting guidance in ASC 740. The standard will be effective for fiscal years beginning after December 15, 2020, and interim periods within those fiscal years, with early adoption permitted. We are currently evaluating the impact of adoption of ASU 2019-12 on our consolidated financial statements.

No other new accounting pronouncement issued or effective during the three months ended March 31, 2020 had or is expected to have a material impact on our consolidated financial statements or disclosures.

Note M – Subsequent Events

At the Market Offerings

During the period of April 1, 2020 through May 7, 2020, we received net proceeds of approximately \$15.9 million from the sale of approximately 6.1 million shares of our common stock under our At Market Issuance Sales Agreement with B. Riley FBR, Inc.

Paycheck Protection Program

In May 2020, we entered into promissory notes with Bank of America, NA for aggregate loan proceeds of approximately \$6.2 million (collectively, the “Loan”) under the Small Business Administration (the “SBA”) Paycheck Protection Program of the Coronavirus Aid, Relief and Economic Security Act of 2020 (the “CARES Act”). We intend to use at least 75% of the Loan proceeds for covered payroll costs and no more than 25% of the Loan proceeds for rent and utilities in accordance with the relevant terms and conditions of the CARES Act. Each Loan has a two-year term and bears interest at a rate of 1.00% per annum.

The Loan may be forgiven partially or fully if the Loan proceeds are used for covered payroll costs, rent and utilities, provided that such amounts are incurred during the eight-week period commencing on receipt of the Loan proceeds, and at least 75% of any forgiven amount has been used for covered payroll costs. Any forgiveness of the Loan will be subject to approval by the SBA and will require us to apply for such treatment in the future.

Forward Looking Statements

This Quarterly Report on Form 10-Q and other written and oral statements we make from time to time contain certain “forward-looking” statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the “Exchange Act”). You can identify these forward-looking statements by the fact they use words such as “could,” “expect,” “anticipate,” “estimate,” “target,” “may,” “project,” “guidance,” “intend,” “plan,” “believe,” “will,” “potential,” “opportunity,” “future” and other words and terms of similar meaning and expression in connection with any discussion of future operating or financial performance. You can also identify forward-looking statements by the fact that they do not relate strictly to historical or current facts. Such forward-looking statements are based on current expectations and involve inherent risks and uncertainties, including factors that could delay, divert or change any of them, and could cause actual outcomes to differ materially from current expectations. These statements relate to, among other things, our business strategy, our research and development, our product development efforts, our ability to commercialize our product candidates, the activities of our licensees, our prospects for initiating partnerships or collaborations, the timing of the introduction of products, the effect of new accounting pronouncements, uncertainty regarding our future operating results and our profitability, anticipated sources of funds as well as our plans, objectives, expectations, and intentions.

We have included more detailed descriptions of these risks and uncertainties and other risks and uncertainties applicable to our business that we believe could cause actual results to differ materially from any forward-looking statements in Part II-Item 1A “Risk Factors” of this Quarterly Report on Form 10-Q. We encourage you to read those descriptions carefully. Although we believe we have been prudent in our plans and assumptions, no assurance can be given that any goal or plan set forth in forward-looking statements can be achieved. We caution investors not to place significant reliance on forward-looking statements contained in this document; such statements need to be evaluated in light of all the information contained in this document. Furthermore, the statements speak only as of the date of this document, and we undertake no obligation to update or revise these statements.

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Overview

We are a clinical-stage immuno-oncology (“I-O”) company advancing an extensive pipeline of immune checkpoint antibodies, adoptive cell therapies and neoantigen vaccines, to fight cancer. Our business is designed to drive success in I-O through speed, innovation and effective combination therapies. We believe that combination therapies and a deep understanding of each patient’s cancer will drive substantial expansion of the patient population benefiting from current I-O therapies. In addition to a diverse pipeline, we have assembled fully integrated end-to-end capabilities including novel target discovery, antibody generation, cell line development and good manufacturing practice (“GMP”) manufacturing. We believe that these fully integrated capabilities enable us to produce novel candidates on timelines that are shorter than the industry standard. Leveraging our science and capabilities, we have forged important partnerships to advance our innovation.

We are developing a comprehensive I-O portfolio driven by the following platforms and programs, which we intend to utilize individually and in combination:

- our multiple antibody discovery platforms, including our proprietary display technologies, designed to drive the discovery of future CPM antibody candidates;
- our antibody candidate programs, including our CPM programs;
- our vaccine programs, including Prophage™, AutoSynVax™ and PhosPhoSynVax™;
- our saponin-based vaccine adjuvants, principally our QS-21 Stimulon™ adjuvant, or QS-21 Stimulon; and
- our cell therapy subsidiary, AgenTus Therapeutics, Inc. (“AgenTus Therapeutics”), which is designed to drive the discovery of future adoptive cell therapy, or “living drugs” (Activated, CAR-T and TCR) programs.

As a result of the COVID-19 pandemic, we recently streamlined our operations and repurposed certain of our R&D efforts to advance product candidates for the potential treatment of COVID-19, including certain agents from our existing clinical portfolio.

We assess development, commercialization and partnering strategies for each of our product candidates periodically based on several factors, including pre-clinical and clinical trial results, competitive positioning and funding requirements and resources. Our most advanced antibody candidates are balstilimab (an anti-PD-1 antibody) and zalifrelimab (an anti-CTLA-4 antibody), which are

currently in Phase 2 trials of balstilimab monotherapy and balstilimab/zalifrelimab combination for patients with second-line cervical cancer. Both of these trials are designed to support Biological License Application (“BLA”) filings under the U.S. Food and Drug Administration (“FDA”) accelerated approval pathway. We announced interim data from these trials in February and March 2020 and expect to file two BLAs in the second half of 2020. We have formed collaborations with companies such as Gilead Sciences, Inc. (“Gilead”), Incyte Corporation (“Incyte”), Merck Sharpe & Dohme (“Merck”) and Recepta Biopharma SA (“Recepta”). Through these alliances, as well as our own internal programs, we currently have more than a dozen antibody programs in pre-clinical or clinical development.

In February 2017, we amended our Incyte Collaboration Agreement to, among other things, convert the G1TR and OX40 programs from profit-share to royalty-bearing programs, and there are no longer any profit-share programs remaining under the collaboration. Pursuant to the amended agreement, we received accelerated milestone payments of \$20.0 million from Incyte related to the clinical development of INCAGN1876 (anti-G1TR agonist) and INCAGN1949 (anti-OX40 agonist). Concurrent with the execution of the amendment, we and Incyte also entered into the Stock Purchase Agreement whereby Incyte purchased an additional 10 million shares of our common stock at \$6.00 per share, resulting in additional proceeds of \$60.0 million to us. In September 2018, we, through our wholly-owned subsidiary, Agenus Royalty Fund, LLC, entered into a Royalty Purchase Agreement (the “XOMA Royalty Purchase Agreement”) with XOMA (US) LLC (“XOMA”). Pursuant to the terms of the XOMA Royalty Purchase Agreement, XOMA paid us \$15.0 million at closing in exchange for the right to receive 33% of the future royalties and 10% of the future milestones that we are entitled to receive from Incyte and Merck, net of certain of our obligations to a third party. After taking into account our obligations under the XOMA Royalty Purchase Agreement, as of March 31, 2020, we remain eligible to receive up to \$450.0 million and \$85.5 million in potential development, regulatory and commercial milestones from Incyte and Merck, respectively.

In December 2018, we entered into a series of agreements with Gilead to collaborate on the development and commercialization of up to five novel I-O therapies (the “Gilead Collaboration Agreements”). Pursuant to the Gilead Collaboration Agreements, we received an upfront cash payment from Gilead of \$120.0 million following the closing in January 2019, as well as milestone payments totaling \$22.5 million in 2019. We are eligible to receive up to an additional \$1.7 billion in aggregate potential fees and milestones. At closing, Gilead received worldwide exclusive rights to our bispecific antibody, AGEN1423 (now GS-1423). Gilead also received the exclusive option to license exclusively AGEN1223, a bispecific antibody, and AGEN2373, a monospecific antibody. We filed INDs for each of AGEN1423 (now GS-1423), AGEN1223 and AGEN2373 in 2019, and all three assets are now in clinical development. We are responsible for developing the option programs up to the option decision points, at which time Gilead may acquire exclusive rights to the programs on option exercise. For either, but not both, of the option programs, we have the right to opt-in to share Gilead’s development and commercialization costs in the United States in exchange for a profit (loss) share on a 50:50 basis and revised milestone payments. Gilead also received the right of first negotiation for two additional, undisclosed programs. At the closing, Gilead also purchased 11,111,111 shares of Agenus common stock for \$30.0 million pursuant to a stock purchase agreement.

Our QS-21 Stimulon adjuvant is partnered with GlaxoSmithKline (“GSK”) and is a key component in multiple GSK vaccine programs. These programs are in various stages, with the most advanced being GSK’s shingles vaccine, Shingrix. In October 2017, GSK’s shingles vaccine was approved in the United States by the FDA. In January 2018, we entered into a Royalty Purchase Agreement with Healthcare Royalty Partners III, L.P. and certain of its affiliates (together, “HCR”), pursuant to which HCR purchased 100% of our worldwide rights to receive royalties from GSK on GSK’s sales of vaccines containing our QS-21 Stimulon adjuvant. We do not incur clinical development costs for products partnered with GSK. We were also entitled to receive up to \$40.35 million in milestone payments from HCR based on sales of GSK’s vaccines as follows: (i) \$15.1 million upon reaching \$2.0 billion last-twelve-months net sales any time prior to 2024 (the “First HCR Milestone”) and (ii) \$25.25 million upon reaching \$2.75 billion last-twelve-months net sales any time prior to 2026. GSK’s net sales of Shingrix for the twelve months ended December 31, 2019 exceeded \$2.0 billion. As a result, we received approximately \$12.7 million of the First HCR Milestone in March 2020, and expect to receive the remaining \$2.4 million of the First HCR Milestone in the second quarter of 2020.

Our business activities include product research and development, intellectual property prosecution, manufacturing, regulatory and clinical affairs, corporate finance and development activities, and support of our collaborations. Our product candidates require clinical trials and approvals from regulatory agencies, as well as acceptance in the marketplace. Part of our strategy is to develop and commercialize some of our product candidates by continuing our existing arrangements with academic and corporate collaborators and licensees and by entering into new collaborations.

In October 2017, we announced the launch of a subsidiary that is advancing our cell therapy business, AgenTus Therapeutics. AgenTus Therapeutics is focused on the discovery, development, and commercialization of breakthrough “living drugs” to advance cures for cancer patients, currently advancing allogeneic cell therapies that include unmodified iNKT cells. AgenTus Therapeutics licenses intellectual property assets from Agenus and has its own management and governance.

Historical Results of Operations

Three months ended March 31, 2020 compared to the three months ended March 31, 2019

Research and development revenue

We recognized research and development revenue of approximately \$1.9 million and \$70.9 million during the three months ended March 31, 2020 and 2019, respectively. Research and development revenues in the first quarter of 2020 primarily consisted of \$1.8 million related to the recognition of deferred revenue earned under our Gilead Collaboration Agreements. Research and development revenues in the first quarter of 2019 primarily consisted of amounts earned under our Gilead Collaboration Agreements, including \$65.5 million related to the recognition of an upfront license fee. During the three months ended March 31, 2020 and 2019, we recorded revenue of \$1.8 million and \$5.0 million, respectively, from the amortization of deferred revenue.

Non-cash royalty revenue related to the sale of future royalties

In January 2018, we sold 100% of our worldwide rights to receive royalties from GSK on sales of GSK's vaccines containing our QS-21 Stimulon adjuvant to HCR. As described in Note F to our Condensed Consolidated Financial Statements, this transaction has been recorded as a liability that amortizes over the estimated life of our Royalty Purchase Agreement with HCR. As a result of this liability accounting, even though the royalties are remitted directly to HCR, we record these royalties from GSK as revenue. During the three months ended March 31, 2020 and 2019, we recognized approximately \$13.2 million and \$8.6 million, respectively, in non-cash royalty revenue related to our agreement with GSK.

Research and development expense

Research and development expense includes the costs associated with our internal research and development activities, including compensation and benefits, occupancy costs, manufacturing costs, costs of consultants, and administrative costs. Research and development expense decreased 9% to \$36.4 million for the three months ended March 31, 2020 from \$40.1 million for the three months ended March 31, 2019. Decreased expenses in the three months ended March 31, 2020 primarily relate to a \$6.2 million decrease in third-party services and other related expenses largely due to the timing of expenses related to the advancement of our antibody programs and a \$1.6 million decrease in expenses attributable to the activities of our subsidiary, AgenTus Therapeutics. These decreases were partially offset by a \$2.1 million increase in personnel related expenses, primarily due to increased headcount, a \$1.3 million increase in expenses attributable to the activities of our subsidiary, Agenus UK Limited and a \$0.6 million increase in other research and development expenses.

General and administrative expense

General and administrative expense consists primarily of personnel costs, facility expenses, and professional fees. General and administrative expenses decreased 2% to \$10.6 million for the three months ended March 31, 2020 from \$10.8 million for the three months ended March 31, 2019. Decreased expenses in the three months ended March 31, 2020 primarily relate to a \$0.6 million decrease in expenses attributable to the activities of our subsidiaries, AgenTus Therapeutics and Agenus UK Limited and a \$0.5 million decrease in professional fees. These decreases were partially offset by a \$0.4 million increase in personnel related expenses, primarily due to increased headcount and a \$0.5 million increase in other general and administrative expenses.

Contingent purchase price consideration fair value adjustment

Contingent purchase price consideration fair value adjustment represents the change in the fair value of our purchase price considerations, which resulted from changes in our market capitalization and share price and changes in the credit spread since each year end. The fair value of our contingent purchase price considerations is based on estimates from a Monte Carlo simulation of our market capitalization and share price.

Non-operating (expense) income

Non-operating (expense) income includes our foreign currency translation adjustment and other income or expense. Non-operating expense increased \$1.4 million for the three months ended March 31, 2020, from income of \$0.4 million for the three months ended March 31, 2019 to expense of \$1.1 million for the three months ended March 31, 2020, primarily due to foreign currency exchange losses in the first quarter of 2020 compared to gains in the first quarter of 2019.

Interest expense, net

Interest expense, net increased to approximately \$14.0 million for the three months ended March 31, 2020 from \$9.1 million for the three months ended March 31, 2019, due to increased non-cash interest recorded in connection with our Royalty Purchase Agreement with HCR.

Research and Development Programs

For the three months ended March 31, 2020, our research and development programs consisted largely of our antibody programs as indicated in the following table (in thousands).

Research and Development Program	Product	Three Months Ended	Year Ended December 31,				Prior to 2017	Total
		March 31,	2019	2018	2017	2020		
Antibody programs*	Various	\$ 28,470	\$ 126,400	\$ 97,011	\$ 95,656	\$ 160,632	\$ 508,169	
Heat shock proteins for cancer	Prophage and ASV	1,097	13,235	13,235	12,499	323,391	363,457	
Vaccine adjuvant	QS-21 Stimulon	79	872	211	222	13,876	15,260	
Other research and development programs		6,717	27,832	14,143	7,748	70,594	127,034	
Total research and development expenses		\$ 36,363	\$ 168,339	\$ 124,600	\$ 116,125	\$ 568,493	\$ 1,013,920	

* Prior to 2014, costs were incurred by 4-AB, which we acquired in February 2014.

Research and development program costs include compensation and other direct costs plus an allocation of indirect costs, based on certain assumptions and our review of the status of each program. Our product candidates are in various stages of development and significant additional expenditures will be required if we start new clinical trials, encounter delays in our programs, apply for regulatory approvals, continue development of our technologies, expand our operations, and/or bring our product candidates to market. The total cost of any particular clinical trial is dependent on a number of factors such as trial design, length of the trial, number of clinical sites, number of patients, and trial sponsorship. The process of obtaining and maintaining regulatory approvals for new therapeutic products is lengthy, expensive, and uncertain. Because of the current stage of our product candidates, among other factors, we are unable to reliably estimate the cost of completing our research and development programs or the timing for bringing such programs to various markets or substantial partnering or out-licensing arrangements, and, therefore, when, if ever, material cash inflows are likely to commence. Active programs involving QS-21 Stimulon depend on our licensee successfully completing clinical trials, successfully manufacturing QS-21 Stimulon to meet demand, obtaining regulatory approvals and successfully commercializing product candidates containing QS-21 Stimulon.

Liquidity and Capital Resources

We have incurred annual operating losses since inception, and we had an accumulated deficit of \$1.3 billion as of March 31, 2020. We expect to incur significant losses over the next several years as we continue development of our technologies and product candidates, manage our regulatory processes, initiate and continue clinical trials, and prepare for potential commercialization of products. To date, we have financed our operations primarily through the sale of equity and debt securities, and interest income earned on cash, cash equivalents, and short-term investment balances. From our inception through March 31, 2020, we have raised aggregate net proceeds of approximately \$1.3 billion through the sale of common and preferred stock, the exercise of stock options and warrants, proceeds from our Employee Stock Purchase Plan, royalty monetization transactions, and the issuance of convertible and other notes.

We maintain an effective registration statement (the "Registration Statement"), covering the offering of up to \$250 million of common stock, preferred stock, warrants, debt securities and units. The Registration Statement includes prospectuses covering the offer, issuance and sale of up to 50 million shares of our common stock from time to time in "at-the-market offerings" pursuant to an At Market Issuance Sales Agreement (the "Sales Agreement") with B. Riley FBR, Inc. as our sales agent. We sold approximately 24.7 million and 6.1 million shares of our common stock pursuant to the Sales Agreement during the three months ended March 31, 2020 and the period of April 1, 2020 through May 7, 2020, respectively, and received aggregate net proceeds totaling \$81.0 million. As of May 7, 2020, we had approximately 3.4 million shares that remained available for sale under the Sales Agreement.

As of March 31, 2020, we had debt outstanding of \$13.6 million in principal. In February 2015, we issued subordinated notes in the aggregate principal amount of \$14.0 million with annual interest at 8% (the "2015 Subordinated Notes"). In February 2020, we amended \$13.5 million of the 2015 Subordinated Notes, extending the due date by three years to February 2023. The remaining \$0.5 million of the 2015 Subordinated Notes were repaid in February 2020. In April 2020, we repaid an additional \$0.5 million of the 2015 Subordinated Notes, leaving \$13.0 million outstanding.

Our cash and cash equivalents at March 31, 2020 were \$92.3 million, an increase of \$30.5 million from December 31, 2019.

During the past five years, we have financed our operations primarily through funding from corporate partnerships and novel financing mechanisms. Based on our current plans and projections, we believe that our cash resources of \$92.3 million as of March 31, 2020, combined with proceeds from financing transactions already completed in the second quarter of 2020, will be sufficient to satisfy our liquidity requirements through the fourth quarter of 2020; we are presently in multiple partnership and out licensing discussions which, if consummated, could extend our cash resources into and beyond next year. Until we are successful in our efforts for capital infusion through these transactions or other financing options, and because the completion of such transactions is not entirely within our control, in accordance with accounting guidance we are required to disclose that substantial doubt exists about our ability to continue as a going concern for a period of one year after the date of filing of this Quarterly Report on Form 10-Q.

Management continues to address the Company's liquidity position and will adjust spending as needed in order to preserve liquidity. Most recently, in response to the COVID-19 pandemic, we streamlined our organization, which included a headcount reduction and the slowing down of several non-priority programs. Our CEO, Dr. Armen, also elected to receive his base salary in stock rather than cash for the balance of 2020. We also continue to monitor the likelihood of success of our key initiatives and have a plan to discontinue funding of such activities if they do not prove to be successful, or, if by the end of the second quarter of 2020 additional cash resources are not put into place, further restrict funding of non-core programs, restrict capital expenditures and/or reduce the scale of our operations as necessary to ensure sufficient cash resources through the fourth quarter of 2020. Our future liquidity needs will be determined primarily by the success of our operations with respect to the progression of our product candidates and key development and regulatory events in the future. Potential sources of additional funding include: (1) pursuing collaboration, out-licensing and/or partnering opportunities for our portfolio programs and product candidates with one or more third parties, (2) renegotiating third party agreements, (3) selling assets, (4) securing additional debt financing and/or (5) selling equity securities.

Our future cash requirements include, but are not limited to, supporting clinical trial and regulatory efforts and continuing our other research and development programs. Since inception, we have entered into various agreements with contract manufacturers, institutions, and clinical research organizations (collectively "third party providers") to perform pre-clinical activities and to conduct and monitor our clinical studies and trials. Under these agreements, subject to the enrollment of patients and performance by the applicable third-party provider, we have estimated our total payments to be \$323.4 million over the term of the related activities. Through March 31, 2020, we have expensed \$271.8 million as research and development expenses and \$254.3 million has been paid under these agreements. The timing of expense recognition and future payments related to these agreements is subject to the enrollment of patients and performance by the applicable third-party provider. We have also entered into sponsored research agreements related to our product candidates that required payments of \$10.0 million, of which \$9.0 million have been paid as of March 31, 2020. We plan to enter into additional agreements with third party providers as well as sponsored research agreements, and we anticipate significant additional expenditures will be required to initiate and advance our various programs.

Part of our strategy is to develop and commercialize some of our product candidates by continuing our existing collaboration arrangements with academic and collaboration partners and licensees and by entering into new collaborations. As a result of our collaboration agreements, we will not completely control the efforts to attempt to bring those product candidates to market. For example, our collaboration with Incyte for the development, manufacture and commercialization of CPM antibodies against certain targets is managed by a joint steering committee, which is controlled by Incyte.

Net cash (used in) provided by operating activities for the three months ended March 31, 2020 and 2019 was (\$34.5) million and \$76.6 million, respectively. Our future ability to generate cash from operations will depend on achieving regulatory approval and market acceptance of our product candidates, achieving benchmarks as defined in existing collaboration agreements, and our ability to enter into new collaborations. See "Management's Discussion and Analysis of Financial Condition and Results of Operations—Forward Looking Statements" in Part I, Item 2, and the risks highlighted under Part II, Item 1A. "Risk Factors", of this Quarterly Report on Form 10-Q.

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements as of March 31, 2020.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Our primary market risk exposure is foreign currency exchange rate risk. International revenues and expenses are generally transacted by our foreign subsidiaries and are denominated in local currency. Approximately 0.5% and 2% of our cash used in operations for the three months ended March 31, 2020 and the year ended December 31, 2019, respectively, was from our foreign subsidiaries. We are also exposed to foreign currency exchange rate fluctuation risk related to our transactions denominated in foreign currencies. We do not currently employ specific strategies, such as the use of derivative instruments or hedging, to manage these

exposures. Our currency exposures vary but are primarily concentrated in the Euro, Swiss Franc and British Pound, in large part due to our subsidiaries, AgenTus Therapeutics SA, with operations in Belgium, Agenus Switzerland which formerly had operations in Switzerland, and Agenus UK Limited, with operations in England. There has been no material change to our interest rate exposure and our approach toward interest rate and foreign currency exchange rate exposures, as described in our Annual Report on Form 10-K for the year ended December 31, 2019.

We had cash and cash equivalents at March 31, 2020 of \$92.3 million, which are exposed to the impact of interest rate changes, and our interest income fluctuates as interest rates change. Additionally, in the normal course of business, we are exposed to fluctuations in interest rates as we seek debt financing and invest excess cash. Due to the short-term nature of our investments in money market funds and U.S. Treasury Bills, our carrying value approximates the fair value of these investments at March 31, 2020.

We invest our cash and cash equivalents in accordance with our investment policy. The primary objectives of our investment policy are to preserve principal, maintain proper liquidity to meet operating needs, and maximize yields. We review our investment policy annually and amend it as deemed necessary. Currently, the investment policy prohibits investing in any structured investment vehicles and asset-backed commercial paper. Although our investments are subject to credit risk, our investment policy specifies credit quality standards for our investments and limits the amount of credit exposure from any single issue, issuer, or type of investment. We do not invest in derivative financial instruments. Accordingly, we do not believe that there is currently any material market risk exposure with respect to derivatives or other financial instruments that would require disclosure under this item.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our Principal Executive Officer and Principal Financial Officer, we conducted an evaluation of the effectiveness of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) and Rule 15d-15(e) promulgated under the Exchange Act. Based on this evaluation, our Principal Executive Officer and our Principal Financial Officer concluded that, as of the end of the period covered by this Quarterly Report on Form 10-Q, our disclosure controls and procedures were effective and were designed to ensure that information we are required to disclose in the reports that we file or submit under the Exchange Act is accumulated and communicated to management, including our Principal Executive Officer and Principal Financial Officer, as appropriate, to allow timely decisions regarding required disclosure, and is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms. It should be noted that any system of controls is designed to provide reasonable, but not absolute, assurances that the system will achieve its stated goals under all reasonably foreseeable circumstances. Our Principal Executive Officer and Principal Financial Officer have each concluded that our disclosure controls and procedures as of the end of the period covered by this report are effective at a level that provides such reasonable assurances.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the three months ended March 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 1A. Risk Factors

Our future operating results could differ materially from the results described in this Quarterly Report on Form 10-Q due to the risks and uncertainties described below. You should consider carefully the following information about risks below in evaluating our business. If any of the following risks actually occur, our business, financial conditions, results of operations and future growth prospects would likely be materially and adversely affected. In these circumstances, the market price of our common stock would likely decline. These risk factors restate and supersede the risk factors set forth under the heading “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the Securities and Exchange Commission (“SEC”) on March 16, 2020.

We cannot assure investors that our assumptions and expectations will prove to be correct. Important factors could cause our actual results to differ materially from those indicated or implied by forward-looking statements. See “Note Regarding Forward-Looking Statements” in this Quarterly Report on Form 10-Q. Factors that could cause or contribute to such differences include those factors discussed below.

Risks Related to Our Financial Position and Need for Additional Capital

We have incurred net losses in every year since our inception and anticipate that we will continue to incur net losses in the future.

Investment in I-O product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate effect or an acceptable safety profile, gain regulatory approval and become commercially viable. We have no products approved for commercial sale and have not generated any revenue from product sales to date, and we continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we are not profitable and have incurred losses in each period since our inception. Our net losses for the years ended December 31, 2019, 2018, and 2017, were \$111.6 million, \$162.0 million and \$120.7 million, respectively. During the three months ended March 31, 2020, we generated a net loss of \$45.3 million. We expect to incur significant losses for the foreseeable future as we continue our research and development of, and seek regulatory approvals for, our product candidates. We anticipate that our expenses will increase substantially if, and as, we:

- conduct clinical trials for our product candidates;
- further develop our antibody programs and platforms, our vaccine programs, and our saponin-based vaccine adjuvants;
- continue to discover and develop additional product candidates;
- maintain, expand and protect our intellectual property portfolio;
- hire additional clinical, scientific manufacturing and commercial personnel;
- expand in-house manufacturing capabilities;
- establish a commercial manufacturing source and secure supply chain capacity sufficient to provide commercial quantities of any product candidates for which we may obtain regulatory approval;
- acquire or in-license other product candidates and technologies;
- seek regulatory approvals for any product candidates that successfully complete clinical trials;
- establish a sales, marketing and distribution infrastructure to commercialize any products for which we may obtain regulatory approval; and

- add operational, regulatory, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts, as well as any additional infrastructure necessary to function as a public company.

To become profitable, we or any current or potential future licensees and collaboration partners must develop and eventually commercialize products with significant market potential at an adequate profit margin after cost of goods sold and other expenses. This will require us to be successful in a range of challenging activities, including completing clinical trials, obtaining marketing approval for product candidates, obtaining adequate reimbursement for product candidates, manufacturing, marketing and selling products for which we may obtain marketing approval and satisfying any post-marketing requirements. We may never succeed in any or all of these activities and, even if we do, we may never generate revenue that is significant or large enough to achieve profitability. If we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our company and could impair our ability to raise capital, maintain our research and development efforts, expand our business or continue our operations. A decline in the value of our company also could cause our stockholders to lose all or part of their investment.

Even if we succeed in commercializing one or more of our product candidates, we will continue to incur substantial research and development and other expenditures to develop and market additional product candidates. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

Furthermore, our ability to generate cash from operations is dependent on the success of our licensees and collaboration partners, as well as the likelihood and timing of new strategic licensing and partnering relationships and/or successful development and commercialization of product candidates, including through our antibody programs and platforms, our vaccine programs, and our saponin-based vaccine adjuvants.

We will require additional capital to fund our operations, and if we fail to obtain necessary financing, we will not be able to complete the development and commercialization of our product candidates.

Our operations have consumed substantial amounts of cash since inception. We expect to continue to spend substantial amounts to conduct further research and development and preclinical or nonclinical testing and studies and clinical trials of our current and future programs, to build a supply chain, to seek regulatory approvals for our product candidates and to launch and commercialize any products for which we receive regulatory approval, including building our own commercial organization. To date, we have financed our operations primarily through the sale of equity, assets, notes, corporate partnerships and interest income. In order to finance future operations, we will be required to raise additional funds in the capital markets, through arrangements with collaboration partners or from other sources.

As of March 31, 2020, we had \$92.3 million of cash and cash equivalents. Based on our current plans and projections, we believe that our cash resources as of March 31, 2020, combined with proceeds from financing transactions already completed in the second quarter of 2020, will be sufficient to satisfy our liquidity requirements through the fourth quarter of 2020; we are presently in multiple partnership and out licensing discussions which can extend our cash resources into and beyond next year. However, our future capital requirements and the period for which our existing resources will support our operations may vary significantly from what we expect, and we will in any event require additional capital in order to complete clinical development of our current programs. Our monthly spending levels will vary based on new and ongoing development and corporate activities. Because the length of time and activities associated with development of our product candidates is highly uncertain, we are unable to estimate the actual funds we will require for development and any approved marketing and commercialization activities. Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the initiation, progress, timing, costs and results of preclinical or nonclinical testing and studies and clinical trials for our product candidates;
- the clinical development plans we establish for our product candidates;
- the number and characteristics of future product candidates that we develop or may in-license;

- our ability to establish and maintain strategic partnerships, licensing or other arrangements and the financial terms of such arrangements;
- the timing, receipt and amount of sales of, or royalties on, our future products and those of our partners, if any;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA, the European Medicines Agency (the “EMA”) and other comparable foreign regulatory authorities;
- the cost of filing, prosecuting, defending and enforcing our patent claims and other intellectual property rights;
- the cost of defending intellectual property disputes, including patent infringement actions brought by third parties against us or our product candidates;
- the effect of competing technological and market developments;
- the costs of establishing and maintaining a supply chain for the development and manufacture of our product candidates;
- the cost and timing of establishing, expanding and scaling manufacturing capabilities; and
- the cost of establishing sales, marketing and distribution capabilities for any product candidates for which we may receive regulatory approval in regions where we choose to commercialize our products on our own.

We do not have any committed external source of funds or other support for our development efforts and we cannot be certain that additional funding will be available on acceptable terms, or at all. Until we can generate sufficient product or royalty revenue to finance our cash requirements, which we may never do, we expect to finance our future cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing or distribution arrangements. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our products or product candidates or one or more of our other research and development initiatives. Any of the above events could significantly harm our business, prospects, financial condition and results of operations and cause the price of our common stock to decline and we may become insolvent.

From time to time we have issued, and in the future expect to issue, projections regarding our future cash position. Such projections include the expectation that we will be able to raise additional funds from the aforementioned sources and our ability to do so is subject to the risks described herein.

We have in the past offered Biotech Electronic Security Tokens, but we are not currently offering such tokens at this time and have not issued any to date.

General economic conditions in the United States and abroad, whether as a result of a public health crisis, such as COVID-19, presidential election or otherwise, may have a material adverse effect on our liquidity and financial condition, particularly if our ability to raise additional funds is impaired.

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, our stockholders’ ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect their rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or product candidates or grant licenses on terms unfavorable to us. We also could be required to seek collaborators for one or more of our current or future product candidates at an earlier stage than

otherwise would be desirable or relinquish our rights to product candidates or technologies that we otherwise would seek to develop or commercialize ourselves.

The nature and length of our operating history may make it difficult to evaluate our technology and product development capabilities and predict our future performance.

We have no products approved for commercial sale and have not generated any revenue from product sales. Our ability to generate product revenue or profits, which we do not expect will occur before 2021, if ever, will depend on the successful development and eventual commercialization of our product candidates, which may never occur. We may never be able to develop or commercialize a marketable product.

All of our programs require additional pre-clinical or clinical research and development, manufacturing supply, capacity and/or expertise, building of a commercial organization, substantial investment and/or significant marketing efforts before we generate any revenue from potential product sales. Other programs of ours require additional discovery research and then preclinical development. In addition, our product candidates must be approved for marketing by the FDA or certain other health regulatory agencies, including the EMA, before we may commercialize any product.

Our operating history, particularly in light of the rapidly evolving I-O field, may make it difficult to evaluate our technology and industry and predict our future performance. We will encounter risks and difficulties frequently experienced by clinical stage companies in rapidly evolving fields. If we do not address these risks successfully, our business will suffer. Similarly, we expect that our financial condition and operating results will fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. As a result, our stockholders should not rely upon the results of any quarterly or annual period as an indicator of future operating performance.

In addition, as a clinical stage company, we have encountered unforeseen expenses, difficulties, complications, delays and other known and unknown circumstances. As we advance our product candidates, we will need to transition from a company with a research and clinical focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

Global credit and financial markets have experienced extreme volatility and disruptions in the past several years, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability, and these adverse market and economic conditions have increased as a result of the COVID-19 pandemic. The scope, duration and long-term impact of the COVID-19 pandemic are unknown at this time, so there can be no assurance how significant the deterioration in credit and financial markets and confidence in economic conditions will be and how long it may continue. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions. If the current equity and credit markets continue to deteriorate, or do not improve, it may make any necessary debt or equity financing more difficult, more costly, and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, manufacturers and other partners may not survive these difficult economic times, which could directly affect our ability to attain our operating goals on schedule and on budget.

As of March 31, 2020, we had cash and cash equivalents of \$92.3 million. While we are not aware of any downgrades, material losses, or other significant deterioration in the fair value of our cash equivalents and investments since March 31, 2020, no assurance can be given that further deterioration of the global credit and financial markets would not negatively impact our current portfolio of cash equivalents or our ability to meet our financing objectives. Furthermore, our stock price may decline due in part to the volatility of the stock market and any general economic downturn.

Our independent registered public accounting firm has included an explanatory paragraph relating to our ability to continue as a going concern in its report on our audited financial statements, and it is possible that such report on our financial statements may include such an explanation again in the future.

We believe we have sufficient capital to fund our operations through the fourth quarter of 2020. Going forward, if we are unable to obtain sufficient funding to support our operations, we could be forced to delay, reduce or eliminate all of our research and development programs, product portfolio expansion or commercialization efforts, and our financial condition and results of operations will be materially and adversely affected and we may be unable to continue as a going concern. In the future, reports from our

independent registered public accounting firm may also contain statements expressing substantial doubt about our ability to continue as a going concern. If we seek additional financing to fund our business activities in the future and there remains substantial doubt about our ability to continue as a going concern, investors or other financing sources may be unwilling to provide additional funding to us on commercially reasonable terms, if at all.

Our obligations to the holders of our promissory notes could materially and adversely affect our liquidity.

In February 2015, we issued senior subordinated promissory notes in the aggregate principal amount of \$14.0 million, of which \$13.0 million remain outstanding, with annual interest of 8% (the “2015 Subordinated Notes”). The 2015 Subordinated Notes were previously due February 20, 2020, and in February 2020, we amended the 2015 Subordinate Notes to extend the maturity date to February 20, 2023. The 2015 Subordinated Notes include default provisions that allow for the acceleration of the principal payment of the 2015 Subordinated Notes in the event we become involved in certain bankruptcy proceedings, become insolvent, fail to make a payment of principal or (after a grace period) interest on the 2015 Subordinated Notes, default on other indebtedness with an aggregate principal balance of \$13.0 million or more if such default has the effect of accelerating the maturity of such indebtedness, or become subject to a legal judgment or similar order for the payment of money in an amount greater than \$13.0 million if such amount will not be covered by third-party insurance. If we default on the 2015 Subordinated Notes and the repayment of such indebtedness is accelerated, our liquidity could be materially and adversely affected.

In May 2020, we issued promissory notes in the aggregate principal amount of approximately \$6.2 million (“PPP Loan”) pursuant to the Paycheck Protection Program of the Coronavirus Aid, Relief and Economic Security Act of 2020 (the “CARES Act”). Under the current terms of the CARES Act, our PPP Loan is eligible for forgiveness if the proceeds are used for covered payroll costs, rent and utilities during the 8-week period immediately following receipt of the proceeds. However, the CARES Act regulations are still being written, and the interim regulations have been revised multiple times since they were initially published in March 2020. Our PPP Loan may not qualify for forgiveness under the final regulations of the CARES Act, and we may be required to repay the PPP Loan in full, with interest.

If we do not have sufficient cash on hand to service or repay our 2015 Subordinated Notes or PPP Loan, we may be required to raise additional capital which entails the risks described herein.

Risks Related to the Development of Our Product Candidates

Our business is highly dependent on the success of our balstilimab and zalifrelimab programs targeting second-line cervical cancer, which still require significant additional clinical development.

Our business and future success depends in large part on our ability to obtain regulatory approval of and then successfully launch and commercialize our initial product candidates targeting cervical cancer.

Our anti-PD-1 and anti-CTLA-4 programs (balstilimab and zalifrelimab, respectively) are in Phase 2 expansion trials with both balstilimab monotherapy and balstilimab/zalifrelimab combination trials for patients with second-line cervical cancer that are designed to support BLA filings in the second half of 2020 under the FDA’s accelerated approval pathway. If approved, we intend to commercialize these assets in 2021. These timelines are aggressive and subject to various factors outside of our control, including regulatory review and approval. In order to file a BLA and seek accelerated approval, we must launch a confirmatory trial and have it be substantially underway at the time of BLA submission. We have initiated a trial that we intended to satisfy this requirement, but there is no guarantee that the FDA will consider it to be substantially underway at the time of BLA submission, and the COVID-19 pandemic may prevent us from doing so on our planned timeline. There is no guarantee that we will be able to file a BLA in 2020, if at all, or that we will be able to commercialize these assets in 2021 even if we receive approval. If our anti-PD-1 and anti-CTLA-4 programs encounter safety, efficacy, supply or manufacturing problems, developmental delays, regulatory or commercialization issues or other problems, our development plans and business would be significantly harmed.

Even though we have observed positive results to date, they may not necessarily be predictive of the final results of the trials or future clinical trials or otherwise be sufficient to support an accelerated approval. Many companies in the pharmaceutical, biopharmaceutical and biotechnology industries have suffered significant setbacks in clinical trials after achieving positive results, and we cannot be certain that we will not face similar setbacks.

All of our other product candidates are in earlier stages of development and will require additional nonclinical and clinical development, regulatory review and approval in multiple jurisdictions, substantial investment, access to sufficient commercial manufacturing capacity and significant marketing efforts before we can generate any revenue from product sales.

The successful development of immune modulating antibodies, including our balstilimab and zalifrelimab programs, is highly uncertain.

Successful development of immune modulating antibodies, such as our balstilimab and zalifrelimab programs, is highly uncertain and is dependent on numerous factors, many of which are beyond our control. Immune modulating antibodies that appear promising in the early phases of development may fail to reach, or remain in, the market for several reasons, including:

- clinical trial results may show our candidates to be less effective than expected (e.g., a clinical trial could fail to meet its primary endpoint(s)) or to have unacceptable side effects, toxicities or other negative consequences;
- failure to receive the necessary regulatory approvals or a delay in receiving such approvals. Among other things, such delays may be caused by slow enrollment in clinical trials, patients dropping out of trials, length of time to achieve trial endpoints, additional time requirements for data analysis, or BLA preparation, discussions with the FDA, an FDA request for additional nonclinical or clinical data, or unexpected safety or manufacturing issues;
- manufacturing costs, formulation issues, pricing or reimbursement issues, or other factors that make the candidates uneconomical;
- proprietary rights of others and their competing products and technologies that may prevent our candidates from being commercialized; and
- failure to initiate or successfully complete confirmation trials for candidates that receive accelerated approval.

The length of time necessary to complete clinical trials and to submit an application for marketing approval for a final decision by a regulatory authority may be difficult to predict for immune modulating antibodies.

Even if we are successful in obtaining market approval, commercial success of any approved products will also depend in large part on the availability of insurance coverage and adequate reimbursement from third-party payors, including government payors, such as the Medicare and Medicaid programs, and managed care organizations, which may be affected by existing and future healthcare reform measures designed to reduce the cost of healthcare. Third-party payors may limit the definition of the target treatment population to one smaller than that implied in the label granted by regulatory authorities, and could require us to conduct additional studies, including post-marketing studies related to the cost-effectiveness of a product, to qualify for reimbursement, which could be costly and divert our resources. If government and other healthcare payors were not to provide adequate insurance coverage and reimbursement levels for one any of our products once approved, market acceptance and commercial success would be reduced.

In addition, if any of our products are approved for marketing, we will be subject to significant regulatory obligations regarding the submission of safety and other post-marketing information and reports and registration, and will need to continue to comply (or ensure that our third-party providers comply) with cGMPs and good clinical practices (“GCPs”), for any clinical trials that we conduct post-approval. In addition, there is always the risk that we or a regulatory authority might identify previously unknown problems with a product post-approval, such as adverse events of unanticipated severity or frequency. Compliance with these requirements is costly and any failure to comply or other issues with our product candidates’ post-approval could have a material adverse effect on our business, financial condition and results of operations.

Preclinical development is uncertain. Some of our antibody programs are in early stage development that may experience delays or may never advance to clinical trials, which would adversely affect our ability to obtain regulatory approvals or commercialize these programs on a timely basis or at all, which would have an adverse effect on our business.

Several of our proprietary antibody programs are currently in early stage development, and many of our antibody programs are pre-clinical. We cannot be certain of the timely completion or outcome of our preclinical testing and studies and cannot predict if the FDA or other regulatory authorities will accept our proposed clinical programs or if the outcome of our preclinical testing and studies will ultimately support the further development of our programs. As a result, we cannot be sure that we will be able to submit INDs or similar applications for our preclinical programs on the timelines we expect, if at all, and we cannot be sure that submission of INDs or similar applications will result in the FDA or other regulatory authorities allowing clinical trials to begin.

Our clinical trials or those of our future collaborators may reveal significant adverse events not seen in our preclinical or nonclinical studies and may result in a safety profile that could inhibit regulatory approval or market acceptance of any of our product candidates.

Before obtaining regulatory approvals for the commercial sale of any products, we must demonstrate through potentially lengthy, complex and expensive preclinical studies and clinical trials that our product candidates are both safe and effective for use in each target indication. Failure can occur at any time during the clinical trial process.

Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through nonclinical studies and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most product candidates that commence clinical trials are never approved as products and there can be no assurance that any of our current or future clinical trials will ultimately be successful or support further clinical development of any of our product candidates.

We intend to develop our existing antibody candidates, and may develop future product candidates, alone and in combination with one or more additional cancer therapies. The uncertainty resulting from the use of our product candidates in combination with other cancer therapies may make it difficult to accurately predict side effects in future clinical trials.

If significant adverse events or other side effects are observed in any of our current or future clinical trials, we may have difficulty recruiting patients to our clinical trials, patients may drop out of our trials, or we may be required to abandon the trials or our development efforts of one or more product candidates altogether. We, the FDA or other applicable regulatory authorities, or an institutional review board may suspend clinical trials of a product candidate at any time for various reasons, including a belief that subjects in such trials are being exposed to unacceptable health risks or adverse side effects. Some potential therapeutics developed in the biotechnology industry that initially showed therapeutic promise in early-stage trials have later been found to cause side effects that prevented their further development. Even if the side effects do not preclude the drug from obtaining or maintaining marketing approval, undesirable side effects may inhibit market acceptance of any approved product due to its tolerability versus other therapies. Any of these developments could materially harm our business, financial condition and prospects.

Positive results from preclinical and clinical studies of our product candidates are not necessarily predictive of the results of later preclinical studies and any future clinical trials of our product candidates. If we cannot replicate the positive results from our earlier studies of our product candidates in our later studies and future clinical trials, we may be unable to successfully develop, obtain regulatory for and commercialize our product candidates.

Any positive results from our preclinical studies of our product candidates may not necessarily be predictive of the results from required later preclinical studies and clinical trials. Similarly, even if we are able to complete our planned preclinical studies or any future clinical trials of our product candidates according to our current development timeline, the positive results from such preclinical studies and clinical trials of our product candidates may not be replicated in subsequent preclinical studies or clinical trial results. Moreover, positive results observed in interim data may not necessarily be predictive of the results from final, more mature data.

For example, in 2018 we presented early data on our balstilimab and zalifrelimab programs at major oncology conferences that demonstrated a clinical benefit (i.e., complete response, partial response or disease stabilization) in more than 60% of patients treated with balstilimab and zalifrelimab at that time. In February and March 2020, we reported interim data from our registrational trials of these same programs that showed overall response rates of approximately 11.9% with balstilimab monotherapy and approximately 26.5% with balstilimab/zalifrelimab combination therapy. The final data readouts on these programs may not show similar positive results.

Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in early-stage development and we cannot be certain that we will not face similar setbacks. These setbacks have been caused by, among other things, preclinical and other nonclinical findings made while clinical trials were underway, or safety or efficacy observations made in preclinical studies and clinical trials, including previously unreported adverse events. Moreover, preclinical, nonclinical and clinical data are often susceptible to varying interpretations and analyses and many companies that believed their product candidates performed satisfactorily in preclinical studies and clinical trials nonetheless failed to obtain FDA or EMA approval.

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

We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. The enrollment of patients depends on many factors, including:

- the severity of the disease under investigation;
- the patient eligibility and exclusion criteria defined in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages and risks of the product candidate being studied in relation to other available therapies, including any new drugs that may be in clinical development or approved for the indications we are investigating;
- the efforts to facilitate timely enrollment in clinical trials;
- the patient referral practices of physicians;
- the ability to monitor patients adequately during and after treatment;
- our ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will drop out of the trials before completion.

In addition, our clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials in such clinical trial site. Moreover, because our product candidates represent a departure from more commonly used methods for our targeted therapeutic areas, potential patients and their doctors may be inclined to use conventional or newly launched competitive therapies, rather than enroll patients in any future clinical trial.

Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our ability to advance the development of our product candidates. The COVID-19 pandemic may cause delays in the patient enrollment in our clinical trials and could prevent the completion and/or timely completion of such trials.

Interim top-line and preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publish interim top-line or preliminary data from our clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Preliminary or top-line data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim and preliminary data should be viewed with caution until the final data are available. In February and March 2020, we reported positive interim data from our lead trials of balstilimab and zalifrelimab. These results may not be indicative of the final results from the study, and the final results may not support a marketing approval. There is no guarantee that either balstilimab monotherapy or balstilimab/zalifrelimab combination therapy will receive marketing approval in any jurisdiction, and failure to

achieve marketing approval for either of these programs could have a material adverse impact on our business. Any adverse differences between preliminary or interim data and final data could significantly harm our business prospects.

The number of product candidates that we are attempting to simultaneously advance creates a significant strain on our resources and may prevent us from successfully advancing any product candidates. If due to our limited resources and access to capital, we may prioritize development of certain product candidates, such decisions may prove to be wrong and may adversely affect our business.

We are currently advancing multiple immune modulating antibodies, vaccines and adoptive cell therapies (through our AgenTus subsidiary). Simultaneously advancing so many product candidates creates a significant strain on our limited human and financial resources. As a result, we may not be able to provide sufficient resources to any single product candidate to permit the successful development and commercialization of such product candidate, causing material harm to our business.

If, due to our limited resources and access to capital, we prioritize development of certain product candidates that ultimately prove to be unsuccessful, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential or a greater likelihood of success. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities.

We may not be able to advance clinical development or commercialize our cancer vaccine candidates or realize any benefits from these programs.

The probability of future clinical development efforts leading to marketing approval and commercialization of Prophage vaccines is highly uncertain. Prophage vaccines have been in clinical development for over 17 years, including multiple Phase 1 and 2 trials in eight different tumor types as well as randomized Phase 3 trials in metastatic melanoma and adjuvant renal cell carcinoma. To date, the only marketing approval for Prophage is in Russia where commercialization of the approved product was unsuccessful. All of our currently planned trials involving Prophage are intended to be sponsored by third parties, and there is no guarantee that they will occur at all.

Our current clinical trial plans with Prophage vaccines entail one government sponsored IND in which we provide support and product supply. For third-party sponsored trials, we lack the ability to control trial design, timelines, tumor tissue procurement and data availability. For example, in January 2017, we announced a clinical trial collaboration with the NCI, whereby the NCI is conducting a double-blind, randomized controlled Phase 2 trial to evaluate the effect of Prophage vaccine in conjunction with Merck's pembrolizumab on the overall survival rate of patients with ndGBM. In addition, the Phase 2 trial of Prophage vaccine in combination with bevacizumab in patients with surgically resectable recurrent glioma that was being conducted under the sponsorship of the Alliance for Clinical Trials in Oncology, a cooperative group of the NCI, has been closed. Our other cancer vaccine programs (ASV and PSV) are in Phase 1 and pre-clinical development, respectively, and there is no guarantee that they will successfully advance in and through the clinic. ASV also utilizes QS-21 Stimulon, and any inability or delay in securing adequate supplies of the adjuvant could have an adverse impact on the program or otherwise delay timelines. Current and future studies may eventually be terminated due to, among other things, slow enrollment, lack of probability that they will yield useful translational and/or efficacy data, lengthy timelines, or the unlikelihood that results will support timely or successful regulatory filings.

Our synthetic Heat Shock Protein ("HSP") peptide-based platform is in early stage development, and there is no guarantee that a product candidate will progress from this platform.

In June 2014, we reported positive results from a Phase 2 trial with HerpVTM, a vaccine candidate for genital herpes from our synthetic HSP peptide-based platform. The Phase 2 trial met its formal endpoints, but subjects were not followed long enough to determine whether the magnitude of the effect on viral load would be sufficient to significantly reduce the incidence, severity, or duration of herpetic lesions or reduce the risk of viral transmission. Although we have not advanced this program into a Phase 3 trial, we initiated our ASV synthetic cancer vaccine program based on our prior findings with this platform. We initiated our first clinical trial for our first AutoSynVax product candidate in 2017 and reported safety and immunogenicity of the vaccine at CIMT2018. Although we have planned to initiate a combination trial with ASV and one or more of our antibodies, the timeline is uncertain and there is no guarantee that we will be able to do so at all. Furthermore, it is possible that research and discoveries by others will render any product candidate from this platform as obsolete or noncompetitive.

Risks Related to the Commercialization of Our Product Candidates

If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals for our product candidates, we will not be able to commercialize, or will be delayed in commercializing, our product candidates, and our ability to generate revenue will be materially impaired.

Our product candidates and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale, distribution, import and export are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable authorities in other countries. Before we can commercialize any of our product candidates, we must obtain marketing approval. Except for Prophage in Russia, we have not received approval to market any of our product candidates from regulatory authorities in any jurisdiction and it is possible that none of our product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval. We, as a company, have limited experience in filing and supporting the applications necessary to gain regulatory approvals and expect to rely in part on third-party contract research organizations (“CROs”) and/or regulatory consultants to assist us in this process. Securing regulatory approval requires the submission of extensive preclinical and clinical data and supporting information to the various regulatory authorities for each therapeutic indication to establish the product candidate’s safety and efficacy. Securing regulatory approval also requires the submission of information about the drug manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Our product candidates may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use.

The process of obtaining regulatory approvals, both in the United States and abroad, is expensive, may take many years if additional clinical trials are required, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted IND, Premarket Approval, BLA or equivalent application types, may cause delays in the approval or rejection of an application. The FDA and comparable authorities in other countries have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical, clinical or other studies. Our product candidates could be delayed in receiving, or fail to receive, regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication or a related companion diagnostic is suitable to identify appropriate patient populations;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate’s clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of an BLA or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

Of the large number of drugs in development, only a small percentage successfully complete the FDA or foreign regulatory approval processes and are commercialized. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects.

We expect the novel nature of our product candidates to create further challenges in obtaining regulatory approval. As a result, our ability to develop product candidates and obtain regulatory approval may be significantly impacted.

For example, the general approach for FDA approval of a new biologic or drug is for sponsors to seek licensure or approval based on dispositive data from well-controlled, Phase 3 clinical trials of the relevant product candidate in the relevant patient population. Phase 3 clinical trials typically involve hundreds of patients, have significant costs and take years to complete. We intend to utilize FDA's accelerated approval program for our product candidates given the limited alternatives for treatments for certain rare diseases, cancer and autoimmune diseases, but the FDA may not agree with our plans.

The FDA may also require a panel of experts, referred to as an Advisory Committee, to deliberate on the adequacy of the safety and efficacy data to support approval. The opinion of the Advisory Committee, although not binding, may have a significant impact on our ability to obtain approval of any product candidates that we develop based on the completed clinical trials.

Moreover, approval of genetic or biomarker diagnostic tests may be necessary in order to advance some of our product candidates to clinical trials or potential commercialization. In the future, regulatory agencies may require the development and approval of such tests. Accordingly, the regulatory approval pathway for such product candidates may be uncertain, complex, expensive and lengthy, and approval may not be obtained.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Any of the foregoing scenarios could reduce the size of the potential market for our product candidates and materially harm the commercial prospects for our product candidates.

If we experience delays in obtaining approval or if we fail to obtain approval of our product candidates, the commercial prospects for our product candidates may be harmed and our ability to generate revenues will be materially impaired.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, while a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a product candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion of the product candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the United States, including additional nonclinical studies or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval.

We may also submit marketing applications in other countries. Regulatory authorities in jurisdictions outside of the United States have requirements for approval of product candidates with which we must comply prior to marketing in those jurisdictions. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. If we fail to comply with the regulatory requirements in international markets and/or receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed.

Our product candidates may cause undesirable side effects that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

Undesirable side effects caused by our product candidates could cause us to interrupt, delay or halt preclinical studies or could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other regulatory authorities. As is the case with many treatments for cancer and autoimmune diseases, it is likely that there may be side effects associated with their use. Results of our trials could reveal a high and unacceptable severity and prevalence of these or other side effects. In such an event, our trials could be suspended or terminated and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. The treatment-related side effects could affect patient recruitment or the ability of

enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly.

Further, clinical trials by their nature utilize a sample of the potential patient population. With a limited number of patients and limited duration of exposure, rare and severe side effects of our product candidates may only be uncovered with a significantly larger number of patients exposed to the product candidate. If our product candidates receive marketing approval and we or others identify undesirable side effects caused by such product candidates (or any other similar drugs) after such approval, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw or limit their approval of such product candidates;
- regulatory authorities may require the addition of labeling statements, such as a “boxed” warning or a contraindication;
- we may be required to create a medication guide outlining the risks of such side effects for distribution to patients;
- we may be required to change the way such product candidates are distributed or administered, conduct additional clinical trials or change the labeling of the product candidates;
- regulatory authorities may require a Risk Evaluation and Mitigation Strategy (“REMS”), plan to mitigate risks, which could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools;
- we may be subject to regulatory investigations and government enforcement actions;
- we may decide to remove such product candidates from the marketplace;
- we could be sued and held liable for injury caused to individuals exposed to or taking our product candidates; and
- our reputation may suffer.

We believe that any of these events could prevent us from achieving or maintaining market acceptance of the affected product candidates and could substantially increase the costs of commercializing our product candidates, if approved, and significantly impact our ability to successfully commercialize our product candidates and generate revenues.

Our competitors may have superior products, manufacturing capability, selling and marketing expertise and/or financial and other resources.

Our product candidates and the product candidates in development by our collaboration partners may fail because of competition from major pharmaceutical companies and specialized biotechnology companies that market products, or that are engaged in the development of product candidates and for the treatment cancer. Many of our competitors, including large pharmaceutical companies, have substantially greater financial, technical and other resources than we do, such as larger research and development staff, experienced marketing and manufacturing organizations and well-established sales forces. Our competitors may:

- develop safer or more effective therapeutic drugs or therapeutic vaccines and other products;
- establish superior intellectual property positions;
- discover technologies that may result in medical insights or breakthroughs, which render our drugs or vaccines obsolete, possibly before they generate any revenue, if ever;
- adversely affect our ability to recruit patients for our clinical trials;
- solidify partnerships or strategic acquisitions that may increase the competitive landscape;
- develop or commercialize their product candidates sooner than we commercialize our own, if ever; or
- implement more effective approaches to sales and marketing and capture some of our potential market share.

Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large, established companies. Established pharmaceutical companies may also invest heavily to accelerate discovery and development of novel therapeutics or to in-license novel therapeutics that could make the product candidates that we develop obsolete. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated in our competitors. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries.

There is no guarantee that our product candidates will be able to compete with potential future products being developed by our competitors.

The CPM drug landscape is crowded with several competitors developing assets against a number of targets. Our development plans are spread out across various indications and lines of therapy, either alone or in combination with other assets. Our competitors range from small cap to large cap companies, with assets in pre-clinical or clinical stages of development. Therefore, the landscape is dynamic and constantly evolving. We and our partners have CPM antibody programs, currently in clinical stage development targeting various pathways (as mono- or bispecifics) including PD-1, CTLA-4, GITR, OX40, TIM-3, LAG-3, CD73, TGFb and CD137.

We are aware of many companies that have products on the market directed towards at least one of these biological targets as these programs, including, without limitation, the following: (1) BMS markets ipilimumab, an anti-CTLA-4 antibody, and nivolumab, an anti-PD-1 antibody, and is developing additional antagonists to LAG-3, TIM-3 and CD73. BMS also has next generation anti-CTLA-4 antibodies in the clinic, which may be competitive to our next generation anti-CTLA-4 program, (2) Merck has an approved anti-PD-1 antibody, as well as anti-CTLA-4 and LAG-3 antagonists recruiting in clinical trials, (3) Regeneron has an approved anti-PD-1 antibody as well as an antibody targeting LAG-3 in clinical development, (4) Roche/Genentech has an approved anti-PD-L1 antibody as well as bispecifics targeting CD137 and TIM-3 in clinical development, (5) AstraZeneca has an approved anti PD-L1 antibody, as well as antibodies targeting CTLA-4 and CD73 in the clinic and (6) Pfizer has an approved anti-PD-L1 (with Merck KgaA) as well as agents targeting PD-1, TGFbR1, CD137 in clinical development. Besides these PD-1 and PD-L1 antibodies that were approved in the U.S., we are also aware of competitors with approved PD-1 agents in ex-U.S. geographies such as China. These include Innovent Biologics, Shanghai Junshi Biosciences, Shanghai HengRui Pharmaceuticals and Beigene.

We are also aware of other competitors with PD-1/PD-L1 agents in clinical development as monospecifics or as bispecifics co-targeting pathways including, but not limited to, CTLA-4, LAG-3, TIM-3, TGFb and CD137. These competitors include but are not limited to AbbVie, Amgen, Arcus Biosciences, Akeso Bio, Beigene, Biocad Ltd., Boehringer Ingelheim, Checkpoint Therapeutics, CStone Pharmaceuticals, Curis Inc., CSPC ZhongQi Pharmaceutical Technology, Elpisience, F-Star, GSK, Genmab / BioNTech, Gilead Sciences, Genor Biopharma/ Apollomics, Incyte, Innovent Biologics Inc., Jounce Therapeutics, Janssen, Jiangsu HengRui Medicine Co., Lee's Pharmaceuticals, MacroGenics, Mabspace Biosciences, Merck KgaA, Merus, Novartis, Servier, Sichuan Kelun Pharmaceutical, Suzhou Alphamab/3D Medicines, Shanghai Henlius Biotech Co Ltd, Sinocelltech, Shattuck Labs and Xencor. We are also aware of competitors with pre-clinical mono- or bispecific programs against PD-1, PD-L1.

In addition, we are also aware of competitors with clinical stage monospecific drug candidates against CTLA-4, GITR, OX40, LAG-3, TIM-3, CD73, TGFb, and CD137. As outlined above, some of these include, but are not limited to AbbVie, Adagene, Arcus Biosciences, Alligator Biosciences, Beigene, Boehringer Ingelheim, Compass Therapeutics, Corvus Pharmaceuticals, CStone Therapeutics, Eli Lilly, Forbius, GSK, Innovent Biologics, Inhibrx, Leap Therapeutics, Lyvgen Biopharma, MedPacto, Novartis, Pieris Pharmaceuticals, Potenza Therapeutics, Servier, Scholar Rock, and Sanofi. Additionally, we are also advancing TIGIT programs towards Investigational New Drug (IND) filing and are aware of competitors with clinical stage anti-TIGIT antibodies. These include, but are not limited to, Arcus Biosciences, BMS, Beigene, Compugen, iTeos Therapeutics, Merck, Mereo Biopharma, Potenza Therapeutics, Roche, Merck, and Mereo Biopharma. We are also aware of competitor programs in preclinical development against these targets. There is no guarantee that our antibody product candidates will be able to successfully compete with our competitors' antibody products and product candidates.

We are conducting both monotherapy and combination trials in second line cervical cancer. We are aware that Merck's PD-1 antagonist, Keytruda, has been approved in advanced cervical cancer. We are also aware of industry sponsored clinical trials, including exploratory studies, that are underway in this setting. Clinical stage competitors include, but are not limited to, Regeneron (anti-PD-1), BMS (anti-PD-1 alone or in combination with CTLA-4), Seattle Genetics and Genmab (antibody drug conjugate targeting Tissue Factor), Iovance Biotherapeutics (autologous TILs), Merck KgaA (anti-PD-L1/TGFb), Roche (anti-PD-L1 alone or in combination with anti-TIGIT), Biocad (anti-PD-1), Genor Biopharma (anti-PD-1), Shanghai Henlius Biotech (anti-PD-1 in combination with albumin bound paclitaxel) and Lee Pharmaceuticals (anti-PD-L1).

We have autologous vaccine programs in clinical development including our Prophage vaccine in clinical development for GBM. We are aware of other therapeutic options in GBM that could compete with our vaccine, including but not limited to the

following: Merck markets temozolomide for treatment of patients with ndGBM and refractory astrocytoma. Other companies are developing vaccines for the treatment of patients with ndGBM, including, but not limited to, Northwest Biotherapeutics (DC-Vax), Mimivax Inc. (SurVaxM) and Annias Immunotherapeutics (CMV Vaccine). Other companies may begin development programs as well. There are companies advancing individualized or synthetic vaccine technologies and/or patient-specific medicine techniques that compete with our HSP based vaccines including, but not limited to: Gritstone Oncology, BioNTech, Moderna/Merck, Genocea Biosciences, ISA Pharmaceuticals, Nouscom, EpiVax Inc., and Vaccibody. In addition, and prior to regulatory approval, if ever, our vaccines and our other product candidates may compete for access to patients with other products in clinical development, with products approved for use in the indications we are studying, or with off-label use of products in the indications we are studying. We anticipate that we will face increased competition in the future as new companies enter markets we seek to address and scientific developments surrounding immunotherapy and other traditional cancer therapies continue to accelerate.

Our subsidiary company, AgenTus Therapeutics, is advancing invariant natural killer T cell (iNKT) therapy. We are aware of competitors advancing NKT therapies, including but not limited to, Kuur Therapeutics and BrightPath Biotherapeutics.

We are aware of compounds that claim to be comparable to QS-21 Stimulon that are being used in clinical trials. Several other vaccine adjuvants are in development or in use and could compete with QS-21 Stimulon for inclusion in vaccines. These adjuvants may include but are not limited to: (1) oligonucleotides, under development by Pfizer, Idera, and Dynavax, (2) MF59, under development by Novartis, (3) IC31, under development by Intercell (now part of Valneva), and (4) MPL, under development by GSK. In the past, we have provided QS-21 Stimulon to other entities under materials transfer arrangements. In at least one instance, it is possible that this material was used without our permission to develop synthetic formulations and/or derivatives of QS-21. In addition, companies such as Adjuvance Technologies, Inc., CSL Limited, and Novavax, Inc., as well as academic institutions and manufacturers of saponin extracts, are developing saponin adjuvants, including derivatives and synthetic formulations. These sources may be competitive to our ability to execute future partnering and licensing arrangements involving QS-21 Stimulon. The existence of products developed by these and other competitors, or other products of which we are not aware, or which other companies may develop in the future, may adversely affect the marketability of products developed or sold using QS-21 Stimulon.

We are also aware of a third party that manufactures pre-clinical material purporting to be comparable to QS-21 Stimulon. The claims being made by this third party may create marketplace confusion and have an adverse effect on the goodwill generated by us and our partners with respect to QS-21 Stimulon. We are also aware of other manufacturers of QS-21. Any diminution of this goodwill may have an adverse effect on our ability to commercialize future products, if any, incorporating this technology, either alone or with a third party.

Even if we obtain regulatory approval to market our product candidates, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our product candidates. We may not be able to implement our business plan if the acceptance of our product candidates is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our product candidates, or if physicians switch to other new drug or biologic products or choose to reserve our product candidates for use in limited circumstances.

Even if our product candidates receive marketing approval, we, or others, may subsequently discover that such product is less effective than previously believed or causes undesirable side effects that were not previously identified and our ability to market such product will be compromised.

Clinical trials of our product candidates are conducted in carefully defined subsets of patients who have agreed to enter into such clinical trials. Consequently, it is possible that our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any, or alternatively fail to identify undesirable side effects. If one or more of our product candidates receives regulatory approval, and we, or others, later discover that they are less effective than previously believed, or cause undesirable side effects, a number of potentially significant negative consequences could result, including:

- withdrawal or limitation by regulatory authorities of approvals of such product;
- seizure of the product by regulatory authorities;
- recall of the product;
- restrictions on the marketing of the product or the manufacturing process for any component thereof;
- requirement by regulatory authorities of additional warnings on the label, such as a "black box" warning or contraindication;
- requirement that we implement a risk evaluation and mitigation strategy or create a medication guide outlining the risks of such side effects for distribution to patients;
- commitment to expensive additional safety studies prior to approval or post-marketing studies required by regulatory authorities of such product;

- the product may become less competitive;
- initiation of regulatory investigations and government enforcement actions;
- initiation of legal action against us to hold us liable for harm caused to patients; and
- harm to our reputation and resulting harm to physician or patient acceptance of our products.

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

Even if our product candidates receive marketing approval, such products may fail to achieve the degree of market acceptance by physicians, patients, third-party payors and others in the medical community necessary for commercial success.

If balstilimab and zalifrelimab or any other future product candidates receive marketing approval, whether as single agents or in combination with other therapies, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. For example, current approved immunotherapies, and other cancer treatments like chemotherapy and radiation therapy, are well established in the medical community, and doctors could continue to rely on these therapies. If balstilimab and zalifrelimab or any other future product candidates do not achieve an adequate level of acceptance, we may not generate significant product revenues and we may not become profitable. The degree of market acceptance of balstilimab and zalifrelimab or any future products, if approved for commercial sale, will depend on a number of factors, including:

- efficacy and potential advantages compared to alternative treatments;
- the ability to offer our products, if approved, for sale at competitive prices;
- convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the strength of marketing and distribution support;
- sufficient third-party coverage or reimbursement, including of combination therapies;
- adoption of a companion diagnostic and/or complementary diagnostic; and
- the prevalence and severity of any side effects.

Even if we are able to commercialize any product candidates, such products may not receive coverage or may become subject to unfavorable pricing regulations, third-party reimbursement practices or healthcare reform initiatives, all of which would harm our business.

The legislation and regulations that govern marketing approvals, pricing and reimbursement for new drug products vary widely from country to country. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or drug licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. In the United States, approval and reimbursement decisions are not linked directly, but there is increasing scrutiny from the Congress and regulatory authorities of the pricing of pharmaceutical products. As a result, we might obtain marketing approval for a product candidate in a particular country, but then be subject to price regulations that delay our commercial launch of the product candidate, possibly for lengthy time periods, and negatively impact the revenues we are able to generate from the sale of the product candidate in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if our product candidates obtain marketing approval.

Significant uncertainty exists as to the coverage and reimbursement status of our product candidates for which we seek regulatory approval. Our ability to commercialize any drugs successfully will depend, in part, on the extent to which reimbursement for these drugs and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. Obtaining and maintaining adequate reimbursement for our product candidates, if approved, may be difficult. Moreover, the process for determining whether a third-party

payor will provide coverage for a product may be separate from the process for setting the price of a product or for establishing the reimbursement rate that such a payor will pay for the product. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage and reimbursement for our products, if they are approved, by third-party payors.

A primary trend in the healthcare industry in the United States and elsewhere is cost containment. Government authorities and third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Third-party payors may also seek, with respect to an approved product, additional clinical evidence that goes beyond the data required to obtain marketing approval. They may require such evidence to demonstrate clinical benefits and value in specific patient populations or they may call for costly pharmaceutical studies to justify coverage and reimbursement or the level of reimbursement relative to other therapies before covering our products. Accordingly, we cannot be sure that reimbursement will be available for any drug that we commercialize and, if reimbursement is available, we cannot be sure as to the level of reimbursement and whether it will be adequate. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval.

There may be significant delays in obtaining reimbursement for newly-approved drugs, and coverage may be more limited than the indications for which the drug is approved by the FDA or comparable regulatory authorities outside of the United States. Moreover, eligibility for reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and profitable payment rates from both government-funded and private payors for any approved drugs that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize drugs and our overall financial condition.

The market opportunities for our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small, and our estimates of the prevalence of our target patient populations may be inaccurate.

Cancer and autoimmune therapies are sometimes characterized as first-line, second-line, third-line and even fourth-line, and the FDA often approves new therapies initially only for last-line use. Initial approvals for new cancer and autoimmune therapies are often restricted to later lines of therapy, and in the case of cancer specifically, for patients with advanced or metastatic disease. Indeed, the BLAs that we intend to file in the second half of 2020 for balstilimab and zalifrelimab target second-line cervical cancer. This will limit the number of cervical cancer patients who may be eligible to use balstilimab and zalifrelimab, if approved.

Our projections of both the number of people who have the diseases we are targeting, as well as the subset of people with these diseases in a position to receive our therapies, if approved, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, input from key opinion leaders, patient foundations, or secondary market research databases, and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these diseases. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates. For instance, we expect our product candidates targeting cervical cancer to target the smaller patient populations that suffer from the respective diseases we seek to treat. Furthermore, regulators and payors may further narrow the therapy-accessible treatment population. Even if we obtain significant market share for our product candidates, because certain of the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications.

We are currently building a marketing and sales organization and have no experience in marketing, selling and distributing products. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our product candidates, we may not be able to generate product revenue.

We currently have a small number of employees that are tasked with building our marketing and sales organization, and we currently have no sales, marketing or distribution capabilities and have no experience as a company in marketing, selling or distributing products. Developing an in-house marketing organization and sales force will require significant capital expenditures,

management resources and time and may ultimately prove to be unsuccessful. In the event we develop and deploy these capabilities, we will have to compete with other pharmaceutical and biotechnology companies to recruit, hire, train and retain marketing and sales personnel.

In addition to establishing internal sales, marketing and distribution capabilities, we may pursue collaborative arrangements regarding the sales and marketing of our products, however, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or if we are able to do so, that they will have effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have little or no control over the marketing and sales efforts of such third parties and our revenue from product sales may be lower than if we had commercialized our product candidates ourselves. We also face competition in our search for third parties to assist us with the sales and marketing efforts of our product candidates.

There can be no assurance that we will be able to develop in-house sales and distribution capabilities or establish or maintain relationships with third-party collaborators to commercialize any product in the United States or overseas.

Risks Related to Manufacturing and Supply

Our product candidates are uniquely manufactured. If we or any of our third-party manufacturers encounter difficulties in manufacturing our product candidates, our ability to provide supply of our product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped, or we may be unable to maintain a commercially viable cost structure.

The manufacturing process used to produce certain of our product candidates is complex and novel and has not yet been validated for commercial production. As a result of these complexities, the cost to manufacture certain of our product candidates is potentially higher than traditional antibodies and the manufacturing process is less reliable and is more difficult to reproduce. Furthermore, our manufacturing process for certain of our product candidates has not been scaled up to commercial production. The actual cost to manufacture and process certain of our product candidates could be greater than we expect and could materially and adversely affect the commercial viability of such product candidates.

Our manufacturing process may be susceptible to logistical issues associated with the collection of materials sourced from various suppliers as well as shipment of the final product to clinical centers, manufacturing issues associated with interruptions in the manufacturing process, contamination, equipment or reagent failure, improper installation or operation of equipment, vendor or operator error, inconsistency in production batches, and variability in product characteristics. Even minor deviations from normal manufacturing processes could result in reduced production yields, lot failures, product defects, product recalls, product liability claims and other supply disruptions. If microbial, viral, or other contaminations are discovered in our product candidates or in our manufacturing facilities in which our product candidates are made, production at such manufacturing facilities may be interrupted for an extended period of time to investigate and remedy the contamination. Further, as we transition from late-stage clinical trials toward approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods, are altered along the way in an effort to optimize processes and results. Such changes carry the risk that they will not achieve these intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials.

Although we continue to optimize our manufacturing process for our antibody product candidates, doing so is a difficult and uncertain task, and there are risks associated with scaling to the level required for commercialization, including, among others, cost overruns, potential problems with process scale-up, process reproducibility, stability issues, lot consistency, and timely availability of reagents and/or raw materials. We ultimately may not be successful in transferring our in-house clinical scale production system to any commercial scale manufacturing facilities that we establish ourselves, or establish at a contract manufacturing organization (“CMO”). If we are unable to adequately validate or scale-up the manufacturing process for our product candidates with our contracted CMO, we will need to transfer to another manufacturer and complete the manufacturing validation process, which can be lengthy. If we are able to adequately validate and scale-up the manufacturing process for our product candidates with a contract manufacturer, we will still need to negotiate with such contract manufacturer an agreement for commercial supply and it is not certain we will be able to come to agreement on terms acceptable to us for all product candidates. As a result, we may ultimately be unable to reduce the cost of goods for our product candidates to levels that will allow for an attractive return on investment if and when those product candidates are commercialized.

The manufacturing process for any products that we may develop is subject to the FDA and foreign regulatory authority approval process, and we will need to contract with manufacturers who can meet all applicable FDA and foreign regulatory authority requirements on an ongoing basis. If we or our CMOs are unable to reliably produce products to specifications acceptable to the FDA

or other regulatory authorities, we may not obtain or maintain the approvals we need to commercialize such products. Even if we obtain regulatory approval for any of our product candidates, there is no assurance that either we or our CMOs will be able to manufacture the approved product to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product, or to meet potential future demand. Any of these challenges could delay completion of clinical trials, require bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidates, impair commercialization efforts, increase our cost of goods, and have an adverse effect on our business, financial condition, results of operations and growth prospects. Our future success depends on our ability to manufacture our products on a timely basis with acceptable manufacturing costs, while at the same time maintaining good quality control and complying with applicable regulatory requirements, and an inability to do so could have a material adverse effect on our business, financial condition, and results of operations. In addition, we could incur higher manufacturing costs if manufacturing processes or standards change, and we could need to replace, modify, design, or build and install equipment, all of which would require additional capital expenditures. Specifically, because our product candidates may have a higher cost of goods than conventional therapies, the risk that coverage and reimbursement rates may be inadequate for us to achieve profitability may be greater.

We own and operate our own clinical scale manufacturing facility and infrastructure in addition to or in lieu of relying on CMOs for the manufacture of clinical supplies of our product candidates. This is costly and time-consuming.

In 2015, we secured our own internal antibody manufacturing capabilities with the purchase of a manufacturing pilot plant from XOMA Corporation in Berkeley, California, and this facility supplies our antibody drug substance requirements for clinical proof-of-concept studies. Any performance failure on the part of our existing facility could delay clinical development or marketing approval of our antibody programs.

To date, we have manufactured our Prophage vaccines in our Lexington, MA facility. Manufacturing of the Prophage vaccines is complex, and various factors could cause delays or an inability to supply the vaccine. Deviations in the processes controlling manufacture or deficiencies in size or quality of source material could result in production failures. Specific vulnerabilities in the process may exist in tumor types in which quality or quantity of tissue is limited. In addition, regulatory bodies may require us to make our manufacturing facility a single product facility. In such an instance, we may elect to manufacture another product candidate in our current facility and would no longer have the ability to manufacture Prophage vaccines as well.

We have given our corporate QS-21 Stimulon licensee, GSK, manufacturing rights for QS-21 Stimulon for use in their product programs. We have retained the right to manufacture QS-21 for ourselves and third parties, although no other such programs are anticipated to bring us substantial revenues in the near future, if ever. Although we have the right to secure certain quantities of QS-21 from GSK and we have some internal supply in-house, we currently do not have an alternative long-term supply partner for this adjuvant. In January 2019, we announced that the Bill & Melinda Gates Foundation awarded us a grant to develop an alternative, plant cell culture-based manufacturing process with the goal of ensuring the continuous future supply of QS-21 Stimulon adjuvant. There is no guarantee that we will be successful in these development efforts.

We also may encounter problems hiring and retaining the experienced scientific, quality-control and manufacturing personnel needed to operate our manufacturing processes, which could result in delays in production or difficulties in maintaining compliance with applicable regulatory requirements.

Any problems in our manufacturing process or facilities, or that of our licensees and suppliers, could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development programs.

The FDA, the EMA and other foreign regulatory authorities may require us to submit samples of any lot of any approved product together with the protocols showing the results of applicable tests at any time. Under some circumstances, the FDA, the EMA or other foreign regulatory authorities may require that we not distribute a lot until the relevant agency authorizes its release. Slight deviations in the manufacturing process, including those affecting quality attributes and stability, may result in unacceptable changes in the product that could result in lot failures or product recalls. Lot failures or product recalls could cause us to delay product launches or clinical trials, which could be costly to us and otherwise harm our business, financial condition, results of operations and prospects. Problems in our manufacturing process could restrict our ability to meet market demand for our products.

We are dependent on suppliers for some of our components and materials used to manufacture our product candidates.

We currently depend on suppliers for some of the components necessary for our product candidates. We cannot be sure that these suppliers will remain in business, that they will be able to meet our supply needs, or that they will not be purchased by one of our competitors or another company that is not interested in continuing to produce these materials for our intended purpose. There are, in general, relatively few alternative sources of supply for these components. These suppliers may be unable or unwilling to meet our future demands for our clinical trials or commercial sale. Establishing additional or replacement suppliers for these components could take a substantial amount of time and it may be difficult to establish replacement suppliers who meet regulatory requirements. Any disruption in supply from a supplier or manufacturing location could lead to supply delays or interruptions which would damage our business, financial condition, results of operations and prospects. If we are able to find a replacement supplier, the replacement supplier would need to be qualified and may require additional regulatory authority approval, which could result in further delay. While we seek to maintain adequate inventory of the materials used to manufacture our products, any interruption or delay in the supply of materials, or our inability to obtain materials from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand of our customers and cause them to cancel orders. In addition, as part of the FDA's approval of our product candidates, we will also require FDA approval of the individual components of our process, which include the manufacturing processes and facilities of our suppliers. Our reliance on these suppliers subjects us to a number of risks that could harm our business, and financial condition, including, among other things: interruption of product candidate or commercial supply resulting from modifications to or discontinuation of a supplier's operations; delays in product shipments resulting from uncorrected defects, reliability issues, or a supplier's variation in a component; a lack of long-term supply arrangements for key components with our suppliers; inability to obtain adequate supply in a timely manner, or to obtain adequate supply on commercially reasonable terms; difficulty and cost associated with locating and qualifying alternative suppliers for our components and precursor cells in a timely manner; production delays related to the evaluation and testing of products from alternative suppliers, and corresponding regulatory qualifications; delay in delivery due to our suppliers prioritizing other customer orders over ours; and fluctuation in delivery by our suppliers due to changes in demand from us or their other customers. If any of these risks materialize, our manufacturing costs could significantly increase and our ability to meet clinical and commercial demand for our products could be impacted.

We rely on third parties for the manufacture of clinical supplies of certain of our product candidates and expect to rely on third parties for commercial supplies of any approved product candidates. This reliance on third parties increases the risk that we will not have sufficient quantities of our drug candidates or drugs or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We expect to rely on third-party manufacturers for the manufacture of commercial supplies of our drug candidates. At present, we do not have long-term supply agreements with all of the vendors needed to produce our product candidates for commercial sale and we may be unable to establish such agreements with third-party manufacturers or to do so on acceptable terms.

The agreements that we do have in place with our third-party manufacturers obligate us to make significant non-refundable deposits to reserve manufacturing slots prior to the receipt of marketing approval for our product candidates. Additionally, if our product candidates are approved, we will be required to make minimum purchases and limit our ability to purchase product in excess of our forecasted needs. As a result, if product sales fall below our minimum purchase obligations, we will be obligated to purchase more product than we can successfully sell, and if product demand exceeds the amount that we can purchase from our manufacturers, we will have to forgo some product sales. Either of these events may materially harm our financial prospects. Finally, reliance on third-party manufacturers entails additional risks, including:

- reliance on the third party for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreement by the third party;
- the possible failure of the third party to manufacture our drug candidate according to our schedule, or at all, including if the third-party manufacturer gives greater priority to the supply of other drugs over our drug candidates, or otherwise does not satisfactorily perform according to the terms of the manufacturing agreement;
- equipment malfunctions, power outages, natural or man-made calamities or other general disruptions experienced by our third-party manufacturers to their respective operations and other general problems with a multi-step manufacturing process;
- the possible misappropriation or disclosure by the third party or others of our proprietary information, including our trade secrets and know-how; and
- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

The agreements that we have in place with our third-party suppliers and manufacturers significantly limit the liability of such suppliers and manufacturers for failing to supply or manufacture, as applicable, our product candidates pursuant to the terms of our agreements, or as required by applicable regulation or law. As a result, if we suffer losses due to our suppliers or manufacturers failure to perform, we will have limited remedies available against such suppliers and manufacturers and are unlikely to be able to recover such losses from them.

Third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside of the United States. Facilities used by our third-party manufacturers must be inspected by the FDA after we submit an BLA and before potential approval of the drug candidate. Similar regulations apply to manufacturers of our drug candidates for use or sale in foreign countries. We will not control the manufacturing process and will be completely dependent on our third-party manufacturers for compliance with the applicable regulatory requirements for the manufacture of our drug candidates. If our manufacturers cannot successfully manufacture material that conforms to the strict regulatory requirements of the FDA and any applicable foreign regulatory authority, they will not be able to secure the applicable approval for their manufacturing facilities. If these facilities are not approved for commercial manufacture, we may need to find alternative manufacturing facilities, which could result in delays in obtaining approval for the applicable drug candidate as alternative qualified manufacturing facilities may not be available on a timely basis or at all. In addition, our manufacturers are subject to ongoing periodic unannounced inspections by the FDA and corresponding state and foreign agencies for compliance with cGMPs and similar regulatory requirements. Failure by any of our manufacturers to comply with applicable cGMPs or other regulatory requirements could result in sanctions being imposed on us or the contract manufacturer, including fines, injunctions, civil penalties, delays, suspensions or withdrawals of approvals, operating restrictions, interruptions in supply and criminal prosecutions, any of which could significantly and adversely affect supplies of our drug candidates and have a material adverse impact on our business, financial condition and results of operations. Any drugs that we may develop may compete with other drug candidates and drugs for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us.

Our anticipated future dependence upon others for the commercial manufacture of our drug candidates or drugs may adversely affect our future profit margins and our ability to commercialize any drugs that receive marketing approval on a timely and competitive basis.

Risks Related to Our Reliance on Third Parties

We are dependent upon our collaboration with Gilead to further develop and commercialize certain of our antibody programs. If we or Gilead fail to perform as expected, the potential for us to generate future revenues under the collaboration could be significantly reduced, the development and/or commercialization of these antibodies may be terminated or substantially delayed, and our business could be adversely affected.

In December 2018, we entered into a series of agreements with Gilead to collaborate on the development and commercialization of up to five novel I-O therapies. Pursuant to the collaboration agreements, Gilead received (i) worldwide exclusive rights to AGEN1423 (now GS-1423), a bispecific antibody, (ii) the exclusive option to license exclusively AGEN1223, a bispecific antibody, and AGEN2373, a monospecific antibody, and (iii) the right of first negotiation for two additional, undisclosed programs. Gilead has the exclusive right to develop and commercialize GS-1423, and we are eligible to receive potential development and commercial milestones of up to \$552.5 million in the aggregate, as well as tiered royalty payments on aggregate net sales ranging from the high single digit to mid-teen percent, subject to certain reductions under certain circumstances. Accordingly, the timely and successful completion by Gilead of clinical development and commercialization activities will significantly affect the timing and amount of any milestones or royalties we may receive for this program. Gilead's activities will be influenced by, among other things, the efforts and allocation of resources by Gilead, which we cannot control. With respect to the option programs, we are responsible for developing each program up to the option decision point, at which time Gilead may acquire exclusive rights to each program on option exercise. During the option period, we are eligible to receive milestones of up to \$30.0 million in the aggregate. If Gilead exercises an option, it would be required to pay an upfront license exercise fee of \$50.0 million for each option that is exercised. Following any option exercise, we would be eligible to receive additional development and commercial milestones of up to \$520.0 million in the aggregate for each such option program, as well as tiered royalty payments on aggregate net sales ranging from the high single digit to mid-teen percent, subject to certain reductions under certain circumstances. For either, but not both, of the option programs, we will have the right to opt-in to share Gilead's development and commercialization costs in the United States for such option program in exchange for a profit (loss) share on a 50:50 basis and revised milestone payments. There is no guarantee that we will receive any fees, milestones or royalties from Gilead. Similarly, there is no guarantee that we will be able to successfully advance the option programs to the option decision point, and, even if we do, there is no guarantee that Gilead will exercise its option for either program. If Gilead does not exercise its option for either of the option programs, there is no guarantee that we will be able to advance any such program ourselves or with another partner. If we wanted to partner either of the programs that are subject to a right of first negotiation with a third party other than Gilead, such discussions could be delayed and ultimately terminated as a result of Gilead's right of first negotiation. Accordingly, we may not be able to partner either of these programs with a third party other than Gilead on attractive terms, if at all.

In addition, our collaboration with Gilead may be unsuccessful due to other factors, including, without limitation, the following:

- Gilead may terminate any of the agreements for convenience upon 90 days' notice;
- Gilead has control over the development of GS-1423, and it will have control over the option programs if and when it exercises its options;
- Gilead may change the focus of its development and commercialization efforts or prioritize other programs more highly and, accordingly, reduce the efforts and resources allocated to GS-1423 or the option programs (if exercised); and
- Gilead may choose not to develop and commercialize GS-1423 or the option programs (if exercised) in all relevant markets or for one or more indications, if at all.

We are dependent upon our collaboration with Incyte to further develop, manufacture and commercialize antibodies against certain targets. If we or Incyte fail to perform as expected, the potential for us to generate future revenues under the collaboration could be significantly reduced, the development and/or commercialization of these antibodies may be terminated or substantially delayed, and our business could be adversely affected.

In February 2017, we amended the terms of our collaboration agreement with Incyte to, among other things, convert the G1TR and OX40 programs from profit-share programs, where we and Incyte shared all costs and profits on a 50:50 basis, to royalty-bearing programs, where Incyte funds 100% of the costs and we are eligible for potential milestones and royalties. In addition, the profit-share

programs relating to TIGIT and one undisclosed target were removed from the collaboration, with TIGIT reverting to Agenus and the undisclosed target reverting to Incyte, each with a potential 15% royalty to the other party on any global net sales. The remaining three royalty-bearing programs in the collaboration targeting TIM-3, LAG-3 and one undisclosed target remain unchanged, and there are no more profit-share programs under the collaboration. For each program in the collaboration, we serve as the lead for pre-clinical development activities through the filing of an IND, and Incyte has exclusive rights and all decision-making authority for manufacturing, clinical development and commercialization. Accordingly, the timely and successful completion by Incyte of clinical development and commercialization activities will significantly affect the timing and amount of any royalties or milestones we may receive under the collaboration agreement. In addition, in March 2017 we transferred manufacturing responsibilities to Incyte for antibodies under that collaboration. Any delays or weaknesses in the ability of Incyte to successfully manufacture could have an adverse impact on those programs. Incyte's activities will be influenced by, among other things, the efforts and allocation of resources by Incyte, which we cannot control. If Incyte does not perform in the manner we expect or fulfill its responsibilities in a timely manner, or at all, the clinical development, manufacturing, regulatory approval, and commercialization efforts related to antibodies under the collaboration could be delayed or terminated. There can be no assurance that any of the development, regulatory or sales milestones will be achieved, or that we will receive any future milestone or royalty payments under the collaboration agreement. In September 2018, we sold to XOMA a portion of the royalties and milestones we are entitled to receive from Incyte.

In addition, our collaboration with Incyte may be unsuccessful due to other factors, including, without limitation, the following:

- Incyte may terminate the agreement or any individual program for convenience upon 12 months' notice;
- Incyte has control over the development of assets in the collaboration;
- Incyte may change the focus of its development and commercialization efforts or prioritize other programs more highly and, accordingly, reduce the efforts and resources allocated to our collaboration;
- Incyte may choose not to develop and commercialize antibody products, if any, in all relevant markets or for one or more indications, if at all, and
- If Incyte is acquired during the term of our collaboration, the acquirer may have competing programs or different strategic priorities that could cause it to reduce its commitment to our collaboration.

If Incyte terminates our collaboration agreement, we may need to raise additional capital and may need to identify and come to agreement with another collaboration partner to advance certain of our antibody programs. Even if we are able to find another partner, this effort could cause delays in our timelines and/or additional expenses, which could adversely affect our business prospects and the future of our antibody product candidates under the collaboration.

Failure to enter into and/or maintain additional significant licensing, distribution and/or collaboration agreements in a timely manner and on favorable terms to us may hinder or cause us to cease our efforts to develop and commercialize our product candidates, increase our development timelines, and/or increase our need to rely on partnering or financing mechanisms, such as sales of debt or equity securities, to fund our operations and continue our current and anticipated programs. Even if we enter into and maintain such agreements, they may not prove successful, and/or we may not receive significant payments from agreements.

Part of our strategy is to develop and commercialize many of our product candidates by continuing or entering into arrangements with academic, government, or corporate collaborators and licensees. Our success depends on our ability to negotiate such agreements on favorable terms and on the success of the other parties in performing research, pre-clinical and clinical testing, completing regulatory applications, and commercializing product candidates. Our research, development, and commercialization efforts with respect to antibody candidates from our technology platforms are, in part, contingent upon the participation of institutional and corporate collaborators. For example, in February 2015, we began a broad collaboration with Incyte to pursue the discovery and development of antibodies, and in December 2018 we entered into a partnership with Gilead relating to five of our antibody programs. Furthermore, we have a collaboration arrangement with Recepta for balstilimab and zalifrelimab, giving Recepta rights to certain South American countries and requiring us to agree upon development plans for these product candidates. Disagreements or the failure of either party to perform satisfactorily could have an adverse impact on these programs.

The Brain Tumor Trials Collaborative, through the NCI, is sponsoring a Phase 2 clinical trial of our Prophage vaccine candidate in combination with Merck's pembrolizumab in patients with glioma. When our licensees or third-party collaborators sponsor clinical trials using our product candidates, we cannot control the timing of enrollment, data readout, or quality of such trials or related activities.

Our ability to advance our antibody programs depends in part on such collaborations. In addition, from time to time we engage in efforts to enter into licensing, distribution and/or collaboration agreements with one or more pharmaceutical or biotechnology

companies to assist us with development and/or commercialization of our other product candidates. Any licensing, distribution and/or collaborations agreements, we enter into, including those with Gilead and Incyte, may pose a number of risks, including the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply;
- collaborators may not perform their obligations as expected;
- collaborators may not pursue development and commercialization of any product candidates that achieve regulatory approval or may elect not to continue or renew development or commercialization programs or license arrangements based on clinical trial results, changes in the collaborators' strategic focus or available funding, or external factors, such as a strategic transaction that may divert resources or create competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products and product candidates if the collaborators believe that the competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;
- product candidates discovered in collaboration with us may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the commercialization of our product candidates;
- collaborators may fail to comply with applicable regulatory requirements regarding the development, manufacture, distribution or marketing of a product candidate or product;
- collaborators with marketing and distribution rights to one or more of our product candidates that achieve regulatory approval may not commit sufficient resources to the marketing and distribution of such product or products;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or terminations of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability;
- if a collaborator of ours is involved in a business combination, the collaborator might deemphasize or terminate the development or commercialization of any product candidate licensed to it by us; and
- collaborations may be terminated by the collaborator, and, if terminated, we could be required to raise additional capital to pursue further development or commercialization of the applicable product candidates.

If our current or future collaborations do not result in the successful discovery, development and commercialization of products or if one of our collaborators terminates its agreement with us, we may not receive any future research funding or milestone or royalty payments under the collaboration. If we do not receive the funding we expect under these agreements, our development of our technology and product candidates could be delayed and we may need additional resources to develop product candidates and our technology. All of the risks relating to product development, regulatory approval and commercialization described in this Annual Report on Form 10-K also apply to the activities of our therapeutic collaborators.

Additionally, if one of our collaborators, such as Gilead, Incyte or Recepta, terminates its agreement with us, we may find it more difficult to attract new collaborators and our perception in the business and financial communities could be adversely affected.

Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. We face significant competition in seeking appropriate collaborators. Our ability to reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors.

If we are unable to reach agreements with suitable collaborators on a timely basis, on acceptable terms, or at all, we may have to curtail the development of a product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional expertise and additional capital, which may not be available to us on acceptable terms, or at all. If we fail to enter into collaborations or do not have sufficient funds or expertise to undertake the necessary development and commercialization activities, we may not be able to further develop our product

candidates, bring them to market and generate revenue from sales of drugs or continue to develop our technology, and our business may be materially and adversely affected.

We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines or comply with regulatory requirements, we may not be able to obtain regulatory approval of or commercialize any potential product candidates.

We depend upon third parties, including independent investigators, to conduct our clinical trials under agreements with universities, medical institutions, CROs, strategic partners and others. Such reliance obligates us to negotiate budgets and contracts with CROs and trial sites, which may result in delays to our development timelines and increased costs.

We rely heavily on third parties over the course of our clinical trials, and, as a result, have limited control over the clinical investigators and limited visibility into their day-to-day activities, including with respect to their compliance with the approved clinical protocol. Nevertheless, we are responsible for ensuring that each of our trials is conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities. We and these third parties are required to comply with GCP requirements, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for product candidates in clinical development. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, clinical investigators and trial sites. If we or any of these third parties fail to comply with applicable GCP requirements, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to suspend or terminate these trials or perform additional nonclinical studies or clinical trials before approving our marketing applications. We cannot be certain that, upon inspection, such regulatory authorities will determine that any of our clinical trials comply with the GCP requirements. In addition, our clinical trials must be conducted with biologic product produced under cGMP requirements and may require a large number of patients.

Our failure or any failure by these third parties to comply with these regulations or to recruit a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

The persons engaged by third parties conducting our clinical trials are not our employees and, except for remedies that may be available to us under our agreements with such third parties, we cannot control whether or not such persons devote sufficient time and resources to our ongoing pre-clinical and clinical programs. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other product development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of or successfully commercialize our product candidates. As a result, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenue could be delayed.

If any of our relationships with these third-party CROs or others terminate, we may not be able to enter into arrangements with alternative CROs or other third parties or to do so on commercially reasonable terms. Switching or adding additional CROs involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO begins work. As a result, delays may occur, which can materially impact our ability to meet our desired clinical development timelines. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter similar challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

Risks Related to Government Regulations

The regulatory approval process for our product candidates in the United States, European Union and other jurisdictions is currently uncertain and will be lengthy, time-consuming and inherently unpredictable and we may experience significant delays in the clinical development and regulatory approval, if any, of our product candidates.

The research, testing, manufacturing, labeling, approval, selling, import, export, marketing and distribution of drug products, including biologics, are subject to extensive regulation by the FDA in the United States and regulatory authorities in states and other

countries. We are not permitted to market any biological product in the United States until we receive a biologics license from the FDA. We have not previously submitted a BLA to the FDA, or similar marketing application to comparable foreign authorities, except for our application related to Prophage. A BLA must include extensive nonclinical and clinical data and supporting information to establish that the product candidate is safe, pure and potent for each desired indication. The BLA must also include significant information regarding the chemistry, manufacturing and controls for the product, and the manufacturing facilities must complete a successful pre-license inspection. We expect the novel nature of our product candidates to create further challenges in obtaining regulatory approval. Accordingly, the regulatory approval pathway for our product candidates may be uncertain, complex, expensive and lengthy, and we may never obtain regulatory approval for our product candidates.

The FDA may also require a panel of experts, referred to as an Advisory Committee, to deliberate on the adequacy of the safety and efficacy data to support approval. The opinion of the Advisory Committee, although not binding, may have a significant impact on our ability to obtain approval of any product candidates that we develop based on the completed clinical trials.

The FDA may disagree with our regulatory plan and we may fail to obtain regulatory approval of our product candidates.

Although the regulatory framework for approving immunotherapy products is evolving, the general approach for FDA approval of a new biologic or drug has historically been to provide dispositive data from two well-controlled, Phase 3 clinical trials of the relevant biologic or drug in the relevant patient population. Phase 3 clinical trials typically involve hundreds of patients, have significant costs and take years to complete. We intend to utilize an accelerated approval approach for our product candidates given the limited alternatives for cancer treatments, but the FDA may not agree with our plans.

In addition, our clinical trial results may also not support approval of our product candidates. Our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that our product candidates are safe and effective for any of their proposed indications;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that our product candidates' clinical and other benefits outweigh their safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from nonclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may be deemed by the FDA or comparable foreign regulatory authorities to be insufficient to support the submission of a BLA or other comparable submission in foreign jurisdictions or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve or find deficiencies with the manufacturing processes and controls or facilities of third-party manufacturers with which we contract for clinical and commercial supplies or any facilities that we may own in the future; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner that could render our clinical data insufficient for approval.

The FDA, the EMA and other regulatory authorities may implement additional regulations or restrictions on the development and commercialization of our product candidates, which may be difficult to predict.

The FDA, the EMA and regulatory authorities in other countries have each expressed interest in further regulating biotechnology products, such as antibodies, vaccines, adjuvants and adoptive cell therapies. Agencies at both the federal and state level in the United States, as well as the U.S. Congressional committees and other governments or governing agencies, have also expressed interest in further regulating the biotechnology industry. Such action may delay or prevent commercialization of some or all of our product candidates. Adverse developments in clinical trials of antibodies, vaccines, adjuvants or adoptive cell therapies products conducted by others may cause the FDA or other oversight bodies to change the requirements for approval of any of our product candidates. Similarly, the EMA governs the development of antibodies, vaccines, adjuvants and adoptive cell therapies in the European Union and may issue new guidelines concerning the development and marketing authorization for such products and require that we comply with these new guidelines. These regulatory review agencies and committees and the new requirements or guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies or trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions. As we advance our product candidates, we will be required to consult with these regulatory agencies and comply with applicable requirements and guidelines. If we fail to do so, we may be required to delay or discontinue development of such product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. Delays as a result of an increased or lengthier regulatory

approval process or further restrictions on the development of our product candidates can be costly and could negatively impact our ability to complete clinical trials and commercialize our current and future product candidates in a timely manner, if at all.

Breakthrough Therapy Designation, Fast Track Designation or Regenerative Medicine Advanced Therapy Designation by the FDA, even if granted for any of our product candidates, may not lead to a faster development, regulatory review or approval process, and it does not increase the likelihood that any of our product candidates will receive marketing approval in the United States.

We may seek a Breakthrough Therapy Designation for some of our product candidates. A breakthrough therapy is defined as a therapy that is intended, alone or in combination with one or more other therapies, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the therapy may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For therapies that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Therapies designated as breakthrough therapies by the FDA may also be eligible for priority review and accelerated approval. Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe one of our product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a Breakthrough Therapy Designation for a product candidate may not result in a faster development process, review or approval compared to therapies considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as breakthrough therapies, the FDA may later decide that such product candidates no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

We have received Fast Track Designation for investigation of balstilimab in combination with zalifrelimab for the treatment of patients with relapsed or refractory metastatic cervical cancer and balstilimab alone for the treatment of cervical cancer, and we intend to apply for such designation for our other product candidates in the future. If a therapy is intended for the treatment of a serious or life-threatening condition and the therapy demonstrates the potential to address unmet medical needs for this condition, the therapy sponsor may apply for Fast Track Designation. The FDA has broad discretion whether or not to grant this designation, so even if we believe a particular product candidate is eligible for this designation; we cannot assure our stockholders that the FDA would decide to grant it. We may not experience a faster development process, review or approval compared to conventional FDA procedures for the product candidate for which we have received, or may receive in the future, Fast Track Designation. The FDA may withdraw Fast Track Designation if it believes that the designation is no longer supported by data from our clinical development program. Fast Track Designation alone does not guarantee qualification for the FDA's priority review procedures.

We may seek Regenerative Medicine Advanced Therapy ("RMAT") designation for some of our product candidates including our allogeneic cell therapies. In 2017, the FDA established the RMAT designation as part of its implementation of the 21st Century Cures Act to expedite review of any drug that meets the following criteria: it qualifies as a RMAT, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, with limited exceptions; it is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such a disease or condition. Like Breakthrough Therapy Designation, RMAT designation provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate, and eligibility for rolling review and priority review. Products granted RMAT designation may also be eligible for accelerated approval on the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit, or reliance upon data obtained from a meaningful number of sites, including through expansion to additional sites. RMAT-designated products that receive accelerated approval may, as appropriate, fulfill their post-approval requirements through the submission of clinical evidence, clinical trials, patient registries, or other sources of real world evidence, such as electronic health records; through the collection of larger confirmatory data sets; or via post-approval monitoring of all patients treated with such therapy prior to approval of the therapy. There is no assurance that we will be able to obtain RMAT designation for any of our product candidates. RMAT designation does not change the FDA's standards for product approval, and there is no assurance that such designation will result in expedited review or approval or that the approved indication will not be narrower than the indication covered by the designation. Additionally, RMAT designation can be revoked if the criteria for eligibility cease to be met as clinical data emerges.

We may seek priority review designation for one or more of our other product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process.

If the FDA determines that a product candidate offers a treatment for a serious condition and, if approved, the product would provide a significant improvement in safety or effectiveness, the FDA may designate the product candidate for priority review. A

priority review designation means that the goal for the FDA to review an application is six months, rather than the standard review period of ten months. We may request priority review for our product candidates. The FDA has broad discretion with respect to whether or not to grant priority review status to a product candidate, so even if we believe a particular product candidate is eligible for such designation or status, the FDA may decide not to grant it. Moreover, a priority review designation does not necessarily result in expedited development or regulatory review or approval process or necessarily confer any advantage with respect to approval compared to conventional FDA procedures. Receiving priority review from the FDA does not guarantee approval within the six-month review cycle or at all.

We may not be able to obtain or maintain orphan drug designations from the FDA for our current and future product candidates, as applicable.

Our strategy includes filing for orphan drug designation where available for our product candidates, but thus far, our applications for orphan drug designation with respect to balstilimab and zalifrelimab have been rejected.

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug or biologic intended to treat a rare disease or condition, which is defined as one occurring in a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug or biologic will be recovered from sales in the United States. In the United States, orphan drug designation entitles a party to financial incentives, such as opportunities for grant funding toward clinical trial costs, tax advantages and user-fee waivers. In addition, if a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan drug exclusivity, which means that the FDA may not approve any other applications, including a full new drug application, or NDA, or BLA, to market the same drug or biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity or where the original manufacturer is unable to assure sufficient product quantity.

In addition, exclusive marketing rights in the United States may be limited if we seek approval for an indication broader than the orphan-designated indication or may be lost if the FDA later determines that the request for designation was materially defective or if we are unable to assure sufficient quantities of the product to meet the needs of patients with the orphan-designated disease or condition. Further, even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties may receive and be approved for the same condition, and only the first applicant to receive approval will receive the benefits of marketing exclusivity. Even after an orphan-designated product is approved, the FDA can subsequently approve a later drug with the same active moiety for the same condition if the FDA concludes that the later drug is clinically superior if it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug, nor gives the drug any advantage in the regulatory review or approval process. In addition, while we may again seek orphan drug designation for our product candidates, we may never receive such designations.

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

Healthcare providers, physicians and third-party payors in the United States and elsewhere play a primary role in the recommendation and prescription of pharmaceutical products. Arrangements with third-party payors and customers can expose pharmaceutical manufactures to broadly applicable fraud and abuse and other healthcare laws and regulations, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act (the "FCA"), which may constrain the business or financial arrangements and relationships through which such companies sell, market and distribute pharmaceutical products. In particular, the promotion, sales and marketing of healthcare items and services, as well as certain business arrangements in the healthcare industry, are subject to extensive laws designed to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, structuring and commission(s), certain customer incentive programs and other business arrangements generally. Activities subject to these laws also involve the improper use of information obtained in the course of patient recruitment for clinical trials. The applicable federal, state and foreign healthcare laws and regulations laws that may affect our ability to operate include, but are not limited to:

- the federal Anti-Kickback Statute, which prohibits, among other things, knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, either the referral of an individual, or the purchase, lease, order or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs. A person or entity can be

found guilty of violating the statute without actual knowledge of the statute or specific intent to violate it. In addition, a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the FCA. The Anti-Kickback Statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers, and formulary managers on the other. There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution;

- federal civil and criminal false claims laws and civil monetary penalty laws, including the FCA, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, false or fraudulent claims for payment to, or approval by, Medicare, Medicaid, or other federal healthcare programs, knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim or an obligation to pay or transmit money to the federal government, or knowingly concealing or knowingly and improperly avoiding, decreasing or concealing an obligation to pay money to the federal government. Manufacturers can be held liable under the FCA even when they do not submit claims directly to government payors if they are deemed to “cause” the submission of false or fraudulent claims. The FCA also permits a private individual acting as a “whistleblower” to bring actions on behalf of the federal government alleging violations of the FCA and to share in any monetary recovery;
- the federal anti-inducement law, prohibits, among other things, the offering or giving of remuneration, which includes, without limitation, any transfer of items or services for free or for less than fair market value (with limited exceptions), to a Medicare or Medicaid beneficiary that the person knows or should know is likely to influence the beneficiary’s selection of a particular supplier of items or services reimbursable by a federal or state governmental program;
- the federal Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity can be found guilty of violating HIPAA without actual knowledge of the statute or specific intent to violate it;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (“HITECH”), and their respective implementing regulations, which impose, among other things, requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information without appropriate authorization. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys’ fees and costs associated with pursuing federal civil actions;
- the federal Physician Payment Sunshine Act, created under the Patient Protection and Affordable Care Act, and its implementing regulations, which require manufacturers of drugs, devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to the United States Department of Health and Human Services (“HHS”), information related to payments or other “transfers of value” made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- the U.S. Federal Food, Drug, and Cosmetic Act, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, and may be broader in scope than their federal equivalents; state and foreign laws that require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state and foreign laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

The distribution of pharmaceutical products is subject to additional requirements and regulations, including extensive record-keeping, licensing, storage and security requirements intended to prevent the unauthorized sale of pharmaceutical products.

The scope and enforcement of each of these laws is uncertain and subject to rapid change in the current environment of healthcare reform, especially in light of the lack of applicable precedent and regulations. Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry. Ensuring business arrangements comply with applicable healthcare laws, as well as responding to possible investigations by government authorities, can be time- and resource-consuming and can divert a company’s financial resources and management’s attention away from the business.

On January 31, 2019, the HHS and HHS Office of Inspector General proposed an amendment to one of the existing Anti-Kickback safe harbors (42 C.F.R. 1001.952(h)) which would prohibit certain pharmaceutical manufacturers from offering rebates to pharmacy benefit managers (“PBMs”), in the Medicare Part D and Medicaid managed care programs. The proposed amendment would remove protection for “discounts” from Anti-Kickback enforcement action and would include criminal and civil penalties for knowingly and willfully offering, paying, soliciting, or receiving remuneration to induce or reward the referral of business reimbursable under federal health care programs. At the same time, HHS also proposed to create a new safe harbor to protect point-of-sale discounts that drug manufacturers provide directly to patients, and adds another safe harbor to protect certain administrative fees paid by manufacturers to PBMs. If this proposal is adopted, in whole or in part, it could affect the pricing and reimbursement for any products for which we receive approval in the future.

The failure to comply with any of these laws or regulatory requirements subjects entities to possible legal or regulatory action. Depending on the circumstances, failure to meet applicable regulatory requirements can result in civil, criminal and administrative penalties, damages, fines, disgorgement, individual imprisonment, possible exclusion from participation in federal and state funded healthcare programs, contractual damages and the curtailment or restricting of our operations, as well as additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws. Any action for violation of these laws, even if successfully defended, could cause a pharmaceutical manufacturer to incur significant legal expenses and divert management’s attention from the operation of the business. Prohibitions or restrictions on sales or withdrawal of future marketed products could materially affect business in an adverse way.

We have adopted a code of business conduct and ethics, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent inappropriate conduct may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. Efforts to ensure that our business arrangements will comply with applicable healthcare laws may involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, disgorgement, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. In addition, the approval and commercialization of any of our product candidates outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

Even if we receive regulatory approval of any product candidates or therapies, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our product candidates.

If any of our product candidates are approved, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, export, import, conduct of post-marketing studies and submission of safety, efficacy and other post-market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities. In addition, we will be subject to continued compliance with cGMP and GCP requirements for any clinical trials that we conduct post-approval.

Manufacturers and manufacturers' facilities are required to comply with extensive FDA, and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to cGMP regulations. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any BLA, other marketing application, and previous responses to inspection observations. Accordingly, we and others with whom we work must continue to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production and quality control.

Any regulatory approvals that we receive for our product candidates may be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials and surveillance to monitor the safety and efficacy of the product candidate. The FDA may also require a risk evaluation and mitigation strategies, or REMS, program as a condition of approval of our product candidates, which could entail requirements for long-term patient follow-up, a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, we will have to comply with requirements including submissions of safety and other post-marketing information and reports and registration.

The FDA may impose consent decrees or withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with our product candidates, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of our products, withdrawal of the product from the market or voluntary or mandatory product recalls;
- fines, warning letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of license approvals;
- product seizure or detention or refusal to permit the import or export of our product candidates; and
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising, and promotion of products that are placed on the market. Products may be promoted only for the approved indications and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses and a company that is found to have improperly promoted off-label uses may be subject to significant liability. The policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained which would adversely affect our business, prospects and ability to achieve or sustain profitability.

We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the current administration may impact our business and industry. Namely, the current administration has taken several executive actions, including the issuance of a number of executive orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine regulatory and oversight activities, such as implementing statutes through rulemaking, issuance of guidance and review and approval of marketing applications. It is difficult to predict how these executive actions, including any executive orders, will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

Healthcare insurance coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates, if approved, which could make it difficult for us to sell any product candidates or therapies profitably.

The success of our product candidates, if approved, depends on the availability of adequate coverage and reimbursement from third-party payors. In addition, because our product candidates represent new approaches to the treatment of the diseases they target, we cannot be sure that coverage and reimbursement will be available for, or accurately estimate the potential revenue from, our product candidates or assure that coverage and reimbursement will be available for any product that we may develop.

Patients who are provided medical treatment for their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors are critical to new product acceptance.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which drugs and treatments they will cover and the amount of reimbursement. Coverage and reimbursement by a third-party payor may depend upon a number of factors, including the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors. As a result, obtaining coverage and reimbursement approval of a product from a government or other third-party payor is a time-consuming and costly process that could require us to provide to each payor supporting scientific, clinical and cost-effectiveness data for the use of our products on a payor-by-payor basis, with no assurance that coverage and adequate reimbursement will be obtained. Even if we obtain coverage for a given product, the resulting reimbursement payment rates might not be adequate for us to achieve or sustain profitability or may require co-payments that patients find unacceptably high. Further, even if one payor provides coverage for a given product, other payors may not provide coverage for that product. Additionally, third-party payors may not cover, or provide adequate reimbursement for, long-term follow-up evaluations required following the use of product candidates. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates. Because our product candidates may have a higher cost of goods than conventional therapies, and may require long-term follow-up evaluations, the risk that coverage and reimbursement rates may be inadequate for us to achieve profitability may be greater. There is significant uncertainty related to insurance coverage and reimbursement of newly approved products. It is difficult to predict at this time what third-party payors will decide with respect to the coverage and reimbursement for our product candidates.

Payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, the Middle Class Tax Relief and Job Creation Act of 2012 required that the Centers for Medicare & Medicaid Services, the agency responsible for administering the Medicare program ("CMS") reduce the Medicare clinical laboratory fee schedule by 2% in 2013, which served as a base for 2014 and subsequent years. In addition, effective January 1, 2014, CMS also began bundling the Medicare payments for certain laboratory tests ordered while a patient received services in a hospital outpatient setting. Additional state and federal healthcare reform measures are expected to be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for certain pharmaceutical products or additional pricing pressures.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for our product candidates. There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. Congressional inquiries and proposed federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. For example, in October 2017, California became the first state to pass legislation requiring pharmaceutical manufacturers to announce planned drug price increases. While this legislation does not directly affect drug prices, it puts further pressure on pharmaceutical manufacturers in setting prices. At least one state, Oregon, has recently passed a similar law, requiring pharmaceutical manufacturers to disclose cost components, and other states are likely to follow. Additionally, the Trump administration recently released a "Blueprint", or plan, to reduce the cost of drugs. The Trump administration's Blueprint contains certain measures that the U.S. Department of Health and Human Services is already working to implement. At the state level, legislatures are increasingly passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. We expect to experience pricing pressures in connection with the sale of any of

our product candidates due to the trend toward managed healthcare, the increasing influence of health maintenance organizations, cost containment initiatives and additional legislative changes.

Ongoing healthcare legislative and regulatory reform measures may have a material adverse effect on our business and results of operations.

Changes in regulations, statutes or the interpretation of existing regulations could impact our business in the future by requiring, for example: (i) changes to our manufacturing arrangements; (ii) additions or modifications to product labeling; (iii) the recall or discontinuation of our products; or (iv) additional record-keeping requirements. If any such changes were to be imposed, they could adversely affect the operation of our business.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Patient Protection and Affordable Care Act (“ACA”), was passed, which substantially changes the way healthcare is financed by both governmental and private insurers, and significantly impacts the U.S. pharmaceutical industry. The ACA, among other things, subjects biological products to potential competition by lower-cost biosimilars, addresses a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, increases the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extends the rebate program to individuals enrolled in Medicaid managed care organizations, establishes annual fees and taxes on manufacturers of certain branded prescription drugs, and creates a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer’s outpatient drugs to be covered under Medicare Part D.

Since January 2017, President Trump has signed two Executive Orders designed to delay the implementation of certain provisions of the ACA or otherwise circumvent some of the requirements for health insurance mandated by the ACA. One Executive Order directs federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. The second Executive Order terminates the cost-sharing subsidies that reimburse insurers under the ACA. On June 14, 2018, U.S. Court of Appeals for the Federal Circuit ruled that the federal government was not required to pay more than \$12 billion in ACA risk corridor payments to third-party payors who argued were owed to them. The effects of this gap in reimbursement on third-party payors, the viability of the ACA marketplace, providers, and potentially our business, are not yet known.

Moreover, on May 30, 2018, the Right to Try Act, was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational new drug products that have completed a Phase I clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a drug manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act, but the manufacturer must develop an internal policy and respond to patient requests according to that policy. We expect that additional foreign, federal and state healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in limited coverage and reimbursement and reduced demand for our products, once approved, or additional pricing pressures.

These laws, and future state and federal healthcare reform measures may be adopted in the future, any of which may result in additional reductions in Medicare and other healthcare funding and otherwise affect the prices we may obtain for any of our product candidates for which we may obtain regulatory approval or the frequency with which any such product candidate is prescribed or used.

European Union drug marketing and reimbursement regulations may materially affect our ability to market and receive coverage for our products in the European member states.

We intend to seek approval to market our product candidates in both the United States and in selected foreign jurisdictions. If we obtain approval in one or more foreign jurisdictions for our product candidates, we will be subject to rules and regulations in those jurisdictions. In some foreign countries, particularly those in the European Union, the pricing of pharmaceutical products is subject to governmental control and other market regulations which could put pressure on the pricing and usage of our product candidates. In these countries, pricing negotiations with governmental authorities can take considerable time after obtaining marketing approval of a product candidate. In addition, market acceptance and sales of our product candidates will depend significantly on the availability of

adequate coverage and reimbursement from third-party payors for our product candidates and may be affected by existing and future healthcare reform measures.

Much like the Anti-Kickback Statute prohibition in the United States, the provision of benefits or advantages to physicians to induce or encourage the prescription, recommendation, endorsement, purchase, supply, order or use of medicinal products is also prohibited in the European Union. The provision of benefits or advantages to physicians is governed by the national anti-bribery laws of European Union Member States. Infringement of these laws could result in substantial fines and imprisonment.

Payments made to physicians in certain European Union Member States must be publicly disclosed. Moreover, agreements with physicians often must be the subject of prior notification and approval by the physician's employer, his or her competent professional organization and/or the regulatory authorities of the individual European Union Member States. These requirements are provided in the national laws, industry codes or professional codes of conduct, applicable in the European Union Member States. Failure to comply with these requirements could result in reputational risk, public reprimands, administrative penalties, fines or imprisonment.

In addition, in most foreign countries, including the European Economic Area, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing and reimbursement vary widely from country to country. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. Reference pricing used by various European Union member states and parallel distribution, or arbitrage between low-priced and high-priced member states, can further reduce prices. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. In some countries, we may be required to conduct a clinical trial or other studies that compare the cost-effectiveness of any of our product candidates to other available therapies in order to obtain or maintain reimbursement or pricing approval. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products. Historically, products launched in the European Union do not follow price structures of the United States and generally prices tend to be significantly lower. Publication of discounts by third-party payors or authorities may lead to further pressure on the prices or reimbursement levels within the country of publication and other countries. If pricing is set at unsatisfactory levels or if reimbursement of our products is unavailable or limited in scope or amount, our revenues from sales by us or our strategic partners and the potential profitability of any of our product candidates in those countries would be negatively affected.

European data collection is governed by restrictive regulations governing the use, processing, and cross-border transfer of personal information.

The collection and use of personal health data in the European Union ("EU"), was previously governed by the provisions of the Data Protection Directive, which has been replaced by the General Data Protection Regulation 2016/679 ("GDPR") as of May 2018.

The GDPR imposes a broad range of strict requirements on companies subject to the GDPR, such as us, including requirements relating to having legal bases for processing personal information relating to identifiable individuals and transferring such information outside the European Economic Area, ("EEA"), including to the United States, providing details to those individuals regarding the processing of their personal information, keeping personal information secure, having data processing agreements with third parties who process personal information, responding to individuals' requests to exercise their rights in respect of their personal information, reporting security breaches involving personal data to the competent national data protection authority and affected individuals, appointing data protection officers, conducting data protection impact assessments, and record-keeping. The GDPR substantially increases the penalties to which we could be subject in the event of any non-compliance, including fines of up to 10 million Euros or up to 2% of our total worldwide annual turnover for certain comparatively minor offenses, or up to 20 million Euros or up to 4% of our total worldwide annual turnover for more serious offenses. Given the new law, we face uncertainty as to the exact interpretation of the new requirements, and we may be unsuccessful in implementing all measures required by data protection authorities or courts in interpretation of the new law.

In particular, national laws of member states of the EU are in the process of being adapted to the requirements under the GDPR, thereby implementing national laws which may partially deviate from the GDPR and impose different obligations from country to country, so that we do not expect to operate in a uniform legal landscape in the EU. Also, in the field of handling genetic data, the GDPR specifically allows national laws to impose additional and more specific requirements or restrictions, and European laws have historically differed quite substantially in this field, leading to additional uncertainty.

If we begin conducting trials in the EEA, we must also ensure that we maintain adequate safeguards to enable the transfer of personal data outside of the EEA, in particular to the United States in compliance with European data protection laws including the GDPR. We expect that we will continue to face uncertainty as to whether our efforts to comply with our obligations under European privacy laws will be sufficient. If we are investigated by a European data protection authority, we may face fines and other penalties. Any such investigation or charges by European data protection authorities could have a negative effect on our existing business and on our ability to attract and retain new clients or pharmaceutical partners. We may also experience hesitancy, reluctance, or refusal by European or multi-national clients or pharmaceutical partners to continue to use our products and solutions due to the potential risk exposure as a result of the current (and, in particular, future) data protection obligations imposed on them by certain data protection authorities in interpretation of current law, including the GDPR. Such clients or pharmaceutical partners may also view any alternative approaches to compliance as being too costly, too burdensome, too legally uncertain, or otherwise objectionable and therefore decide not to do business with us. Any of the foregoing could materially harm our business, prospects, financial condition and results of operations.

Laws and regulations governing any international operations may preclude us from developing, manufacturing and selling certain products outside of the United States and require us to develop and implement costly compliance programs.

Because we have operations outside of the United States, we must dedicate additional resources to comply with numerous laws and regulations in each jurisdiction in which we plan to operate. The FCPA prohibits any U.S. individual or business from paying, offering, authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with certain accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations.

Compliance with the FCPA is expensive and difficult, particularly in countries in which corruption is a recognized problem. We, directly or through our CROs, are conducting clinical trials in countries that Transparency International has identified as “perceived as more corrupt”, including, Brazil, Chile, Georgia, Russia and Ukraine. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

Various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-U.S. nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. If we expand our presence outside of the United States, it will require us to dedicate additional resources to comply with these laws, and these laws may preclude us from developing, manufacturing, or selling certain products and product candidates outside of the United States, which could limit our growth potential and increase our development costs.

The failure to comply with laws governing international business practices may result in substantial civil and criminal penalties and suspension or debarment from government contracting. The SEC also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA’s accounting provisions.

We are subject to certain U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions, and other trade laws and regulations. We can face serious consequences for violations.

Among other matters, U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions, and other trade laws and regulations, which are collectively referred to as Trade Laws, prohibit companies and their employees, agents, clinical research organizations, legal counsel, accountants, consultants, contractors, and other partners from authorizing, promising, offering, providing, soliciting, or receiving directly or indirectly, corrupt or improper payments or anything else of value to or from recipients in the public or private sector. Violations of Trade Laws can result in substantial criminal fines and civil penalties, imprisonment, the loss of trade privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We also expect our non-U.S. activities to increase in time. We plan to engage third parties for clinical trials and/or to obtain necessary permits, licenses, patent registrations, and other regulatory approvals and we can be held liable for the corrupt or other illegal activities of our personnel, agents, or partners, even if we do not explicitly authorize or have prior knowledge of such activities.

Inadequate funding for the FDA and other government agencies could hinder their ability to hire and retain key leadership and other personnel, prevent new products and services from being developed or commercialized in a timely manner or otherwise prevent those agencies from performing normal business functions on which the operation of our business may rely, which could negatively impact our business.

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel and accept the payment of user fees, statutory, regulatory, and policy changes and the impact of crises that hinder its operations, such as COVID-19. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies on which our operations may rely, including those that fund research and development activities, is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also slow the time necessary for new drugs to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, including most recently from December 22, 2018 to January 25, 2019, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA and other government employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

If we do not comply with environmental laws and regulations, we may incur significant costs and potential disruption to our business.

We use or may use hazardous, infectious, and radioactive materials, and recombinant DNA in our operations, which have the potential of being harmful to human health and safety or the environment. We store these hazardous (flammable, corrosive, toxic), infectious, and radioactive materials, and various wastes resulting from their use, at our facilities pending use and ultimate disposal. We are subject to a variety of federal, state, and local laws and regulations governing use, generation, storage, handling, and disposal of these materials. We may incur significant costs complying with both current and future environmental health and safety laws and regulations. In particular, we are subject to regulation by the Occupational Safety and Health Administration, the Environmental Protection Agency, the Drug Enforcement Agency, the Department of Transportation, the Centers for Disease Control and Prevention, the National Institutes of Health, the International Air Transportation Association, and various state and local agencies. At any time, one or more of the aforementioned agencies could adopt regulations that may affect our operations. We are also subject to regulation under the Toxic Substances Control Act and the Resource Conservation Development programs.

Although we believe that our current procedures and programs for handling, storage, and disposal of these materials comply with federal, state, and local laws and regulations, we cannot eliminate the risk of accidents involving contamination from these materials. Although we have a workers' compensation liability policy, we could be held liable for resulting damages in the event of an accident or accidental release, and such damages could be substantially in excess of any available insurance coverage and could substantially disrupt our business.

If we or our employees, independent contractors, consultants, commercial partners and vendors fail to comply with laws or regulations, it could adversely impact our reputation, business and stock price.

We are exposed to the risk of employee fraud or other misconduct our employees, independent contractors, consultants, commercial partners and vendors. Misconduct by employees could include intentional and/or negligent failures to comply with FDA regulations, to provide accurate information to the FDA, to comply with manufacturing standards we have established, to comply with federal and state health care fraud and abuse, transparency, and/or data privacy laws and regulations (including the California Consumer Privacy Act) and security laws and regulations, to report financial information or data accurately or to disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices; to promote transparency; and to protect the privacy and security of patient data. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws will increase significantly, and our costs associated with compliance with such laws are also likely to increase. These laws may impact, among other things, our current activities with principal investigators and research patients, as well as proposed and future sales, marketing and education programs.

While we have adopted a corporate compliance program, we may not be able to protect against all potential issues of noncompliance. Efforts to ensure that our business complies with all applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or

future statutes, regulations, or case law involving applicable laws and regulations.

Employee misconduct could also involve the improper use or disclosure of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. In addition, during the course of our operations, our directors, executives and employees may have access to material, nonpublic information regarding our business, our results of operations or potential transactions we are considering. We may not be able to prevent a director, executive or employee from trading in our common stock on the basis of, or while having access to, material, nonpublic information. If a director, executive or employee was to be investigated, or an action was to be brought against a director, executive or employee for insider trading, it could have a negative impact on our reputation and our stock price. Such a claim, with or without merit, could also result in substantial expenditures of time and money, and divert the attention of our management team.

Risks associated with doing business internationally could negatively affect our business.

We currently have research and development operations in the United Kingdom (“UK”) and clinical operations in eastern Europe, and we expect to pursue pathways to develop and commercialize our product candidates in both U.S. and ex-U.S. jurisdictions. Various risks associated with foreign operations may impact our success. Possible risks of foreign operations include fluctuations in the value of foreign and domestic currencies, requirements to comply with various jurisdictional requirements such as data privacy regulations, disruptions in the import, export, and transportation of patient tumors and our products or product candidates, the product and service needs of foreign customers, difficulties in building and managing foreign relationships, the performance of our licensees or collaborators, geopolitical instability, unexpected regulatory, economic, or political changes in foreign and domestic markets, including without limitation any resulting from the UK’s planned or actual withdrawal from the EU or our current political regime, and limitations on the flexibility of our operations and costs imposed by local labor laws.

The exit of the UK from the European Union may materially affect the regulatory regime that governs our handling of EU personal data and expose us to legal and business risks under European data privacy and protection law.

On January 31, 2020, the UK exited the EU, commonly known as Brexit. Pursuant to the Withdrawal Agreement that has been ratified by both the UK and EU, EU law, including GDPR will continue to apply in the UK until December 31, 2020. The Withdrawal Agreement provides that the UK and EU can elect to extend such transition period by up to two years.

On and after, January 1, 2021, any transfers of personal data to the United Kingdom will then be subject to the requirements of Chapter V of the GDPR and of the Law Enforcement Directive and absent an adequacy finding under GDPR, transfers of personal data from the EU to the UK, including to our facility in Cambridge, UK, would be illegal without adequate safeguards provided for under EC-approved mechanisms, such as current standard contractual clauses or, if approved in the future, an EU-UK privacy shield similar to the current framework in place between the EU and the United States. The extensive authority of UK intelligence and law enforcement agencies, including to conduct surveillance on personal data flows, could reduce the likelihood that the EC would give the UK an adequacy finding and reduce the likelihood that the EC would approve an EU-UK privacy shield. Accordingly, we would be exposed to legal risk for any of our EU-UK personal data transfers, including those that involve sensitive data such as patient and genetic data. Given the uncertainties surrounding the UK’s departure from the EU, it is difficult to precisely identify or quantify the risks described above.

Additionally, it is possible that, over time, the UK Data Protection Act could become less aligned with the GDPR, which could require us to implement different compliance measures for the UK and the European Union and result in potentially enhanced compliance obligations for EU personal data.

As a result, Brexit adds legal risk, uncertainty, complexity and cost to our handling of EU personal information and our privacy and data security compliance programs. If we do not successfully manage such risk, our prospects may be materially harmed.

Comprehensive tax reform legislation could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law the “Tax Cuts and Jobs Act” (the “TCJA”) that significantly reformed the Internal Revenue Code of 1986, as amended. The TCJA, among other things, includes changes to U.S. federal tax rates, imposes significant additional limitations on the deductibility of interest and net operating loss carryforwards, allows for the expensing of capital expenditures, and puts into effect the migration from a “worldwide” system of taxation to a territorial system. Our net deferred tax assets and liabilities were revalued at the newly enacted U.S. corporate rate. We did not recognize any tax expense in the year of enactment as our net deferred tax assets have a full valuation allowance recorded.

Our ability to use net operating losses and research and development credits to offset future taxable income may be subject to certain limitations.

As of December 31, 2019, we had U.S. federal and state net operating loss, or NOL, carryforwards of \$646.3 million and \$184.9 million, respectively, which may be available to offset future taxable income. The federal NOLs include \$607.7 million which expire at various dates through 2037 and \$38.6 million which carryforward indefinitely. The state NOLs expire at various dates through 2038. As of December 31, 2019, we also had U.S. federal and state research and development tax credit carryforwards of \$8.8 million and \$9.4 million, respectively, which may be available to offset future tax liabilities and begin to expire in 2020 and 2033, respectively. In addition, in general, under Sections 382 and 383 of the Code and corresponding provisions of state law, a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its pre-change net operating loss carryforwards or tax credits, or NOLs or credits, to offset future taxable income or taxes. For these purposes, an ownership change generally occurs where the aggregate stock ownership of one or more stockholders or groups of stockholders who owns at least 5% of a corporation’s stock increases its ownership by more than 50 percentage points over its lowest ownership percentage within a specified testing period. Our existing NOLs or credits may be subject to limitations arising from previous ownership changes, including in connection with our recent private placements, IPO and other transactions. In addition, future changes in our stock ownership, many of which are outside of our control, could result in an ownership change under Sections 382 and 383 of the Code and our ability to utilize NOLs or credits may be impaired. Our NOLs or credits may also be impaired under state law. Accordingly, we may not be able to utilize a material portion of our NOLs or credits. Furthermore, our ability to utilize our NOLs or credits is conditioned upon our attaining profitability and generating U. S. federal and state taxable income. As described above under “Risk factors—Risks Related to Our Financial Position and Need for Additional Capital,” we have incurred significant net losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future; and therefore, we do not know whether or when we will generate the U.S. federal or state taxable income necessary to utilize our NOLs or credits that are subject to limitation by Sections 382 and 383 of the Code. The reduction of the corporate tax rate under the TCJA caused a reduction in the economic benefit of our net operating loss carryforwards and other deferred tax assets available to us. Under the TCJA, net operating loss carryforwards generated after December 31, 2017 will not be subject to expiration.

Risks Related to Our Intellectual Property

If we are unable to obtain and enforce patent protection for our product candidates and related technology, our business could be materially harmed.

We rely upon a combination of patents, trade secret protection and confidentiality agreements to protect the intellectual property related to our product candidates and technology. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to duplicate or surpass our technological achievements, eroding our competitive position in the market. Our patent applications may not result in issued patents, and, even if issued, the patents may be challenged and invalidated. Moreover, our patents and patent applications may not be sufficiently broad to prevent others from practicing our technologies or developing competing products. We also face the risk that others may independently develop similar or alternative technologies or may design around our proprietary property.

Issued patents may be challenged, narrowed, invalidated or circumvented. In addition, court decisions may introduce uncertainty in the enforceability or scope of patents owned by biotechnology companies. The legal systems of certain countries do not favor the aggressive enforcement of patents, and the laws of foreign countries may not allow us to protect our inventions with patents to the same extent as the laws of the United States. Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in scientific literature lag behind actual discoveries, we cannot be certain that we were the first to make the inventions claimed in our issued patents or pending patent applications, or that we were the first to file for protection of the inventions set forth in our patents or patent applications. As a result, we may not be able to obtain or maintain protection for certain inventions. Therefore, the enforceability and scope of our patents in the United States and in foreign countries cannot be predicted with certainty and, as a result, any patents that we own, or license may not provide sufficient protection against competitors. We may not be able to obtain or maintain patent protection from our pending patent applications, from those we may file in the future, or from those we may license from third parties. Moreover, even if we are able to obtain patent protection, such patent protection may be of insufficient scope to achieve our business objectives.

Patent terms may be inadequate to protect our competitive position on our product candidates for an adequate amount of time. Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its effective filing date. Various extensions may be available; however, the life of a patent, and the protection it affords, is limited. Without patent protection for our product candidates, we may be open to competition from biosimilar or generic versions of our product candidates. Furthermore, the product development timeline for biotechnology products is lengthy and it is possible that our issued patents covering our product candidates in the United States and other jurisdictions may expire prior to commercial launch. For example, if we encounter delays in our development efforts, including our clinical trials, the period of time during which we could market our product candidates under patent protection could be reduced.

Our strategy depends on our ability to identify and seek patent protection for our discoveries. This process is expensive and time consuming, and we and our current or future licensors or licensees may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner or in all jurisdictions where protection may be commercially advantageous. It is also possible that we or our current licensors or licensees, or any future licensors or licensees, may not identify patentable aspects of inventions made in the course of development and commercialization activities in time to obtain patent protection on them. Therefore, these and any of our patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. Defects of form in the preparation or filing of our patents or patent applications may exist, or may arise in the future, for example with respect to proper priority claims, inventorship, etc. If we or our current licensors or licensees, or any future licensors or licensees, fail to establish, maintain or protect such patents and other intellectual property rights, such rights may be reduced or eliminated. If our current licensors or licensees, or any future licensors or licensees, are not fully cooperative or disagree with us as to the prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised. If there are material defects in the form or preparation of our patents or patent applications, such patents or applications may be invalid and unenforceable. Despite our efforts to protect our proprietary rights, unauthorized parties may be able to obtain and use information that we regard as proprietary. The issuance of a patent does not ensure that it is valid or enforceable, so even if we obtain patents, they may not be valid or enforceable against third parties. In addition, the issuance of a patent does not give us the right to practice the patented invention. Third parties may have blocking patents that could prevent us from marketing our own patented product and practicing our own patented technology. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business.

The patent landscapes in the fields of antibody, vaccine, adjuvant and adoptive cell therapy development, manufacture and commercialization are crowded. For example, we are aware of third party patents directed to methods for identifying and producing therapeutic products such as antibodies, vaccines, adjuvants and adoptive cell therapies. We are also aware of third party patents directed to products targeting numerous antigens for which we also seek to identify, develop, and commercialize products. For example, some patents claim products based on competitive binding with existing products, some claim products based on specifying sequence or other structural information, and some claim various methods of discovery, production, or use of such products.

These or other third-party patents could impact our freedom to operate in relation to our technology platforms, as well as in relation to development and commercialization of products identified by us as therapeutic candidates. As we discover and develop our candidates, we will continue to conduct analyses of these third-party patents to determine whether we believe we might infringe them, and if so, whether they would be likely to be deemed valid and enforceable if challenged. If we determine that a license for a given patent or family of patents is necessary or desirable, there can be no guarantee that a license would be available on favorable terms, or at all. Inability to obtain a license on favorable terms, should such a license be determined to be necessary or desirable, could, without limitation, result in increased costs to design around the third-party patents, delay product launch, or result in cancellation of the affected program or cessation of use of the affected technology.

Third parties may also seek to market biosimilar versions of any approved products. Alternatively, third parties may seek approval to market their own products similar to or otherwise competitive with our products. In these circumstances, we may need to defend and/or assert our patents, including by filing lawsuits alleging patent infringement. In any of these types of proceedings, a court or agency with jurisdiction may find our patents invalid and/or unenforceable. Even if we have valid and enforceable patents, these patents still may not provide protection against competing products or processes sufficient to achieve our business objectives.

Through our acquisitions of 4-AB, PhosImmune and certain assets of Celexion, we own, co-own, or have exclusive rights to a number of patents and patent applications directed to various methods and compositions, including methods for identifying therapeutic antibodies and product candidates arising out of such entities' technology platforms. In particular, we own patents and patent applications relating to our Retrocyte Display™ technology platform, a high throughput antibody expression platform for the identification of fully-human and humanized monoclonal antibodies. This patent family is projected to expire between 2029 and 2031. Through our acquisition of PhosImmune, we own, co-own, or have exclusive rights to patents and patent applications directed to various methods and compositions, including a patent directed to methods for identifying phosphorylated proteins using mass spectrometry. This patent is projected to expire in 2023. In addition, as we advance our research and development efforts with our

institutional and corporate collaborators, we are seeking patent protection for newly identified therapeutic antibodies and product candidates. We can provide no assurance that any of our patents, including the patents that we acquired or in-licensed in connection with our acquisitions of 4-AB, PhosImmune and certain assets of Celexion, will have commercial value, or that any of our existing or future patent applications, including the patent applications that we acquired or in-licensed in connection with our acquisitions of 4-AB, PhosImmune and certain assets of Celexion, will result in the issuance of valid and enforceable patents.

Our issued patents covering Prophage vaccine and methods of use thereof, alone or in combination with other agents, expired or will expire at various dates between 2015 and 2024. In particular, our issued U.S. patents covering Prophage composition of matter expired in 2015. In addition, our issued patents covering QS-21 Stimulon composition of matter expired in 2008. We continue to explore means of extending the life cycle of our patent portfolio.

The patent position of biopharmaceutical, pharmaceutical or biotechnology companies, including ours, is generally uncertain and involves complex legal and factual considerations. The standards which the USPTO and its foreign counterparts use to grant patents are not always applied predictably or uniformly and can change. There is also no uniform, worldwide policy regarding the subject matter and scope of claims granted or allowable in biopharmaceutical, pharmaceutical or biotechnology patents. The laws of some foreign countries do not protect proprietary information to the same extent as the laws of the United States, and many companies have encountered significant problems and costs in protecting their proprietary information in these foreign countries. Outside the United States, patent protection must be sought in individual jurisdictions, further adding to the cost and uncertainty of obtaining adequate patent protection outside of the United States. Accordingly, we cannot predict whether additional patents protecting our technology will issue in the United States or in foreign jurisdictions, or whether any patents that do issue will have claims of adequate scope to provide competitive advantage. Moreover, we cannot predict whether third parties will be able to successfully obtain claims or the breadth of such claims. The allowance of broader claims may increase the incidence and cost of patent interference proceedings, opposition proceedings, post-grant review, inter partes review, and/or reexamination proceedings, the risk of infringement litigation, and the vulnerability of the claims to challenge. On the other hand, the allowance of narrower claims does not eliminate the potential for adversarial proceedings and may fail to provide a competitive advantage. Our issued patents may not contain claims sufficiently broad to protect us against third parties with similar technologies or products or provide us with any competitive advantage.

If any of our owned or in-licensed patent applications do not issue as patents in any jurisdiction, we may not be able to compete effectively.

Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our inventions, obtain, maintain, and enforce our intellectual property rights and, more generally, could affect the value of our intellectual property or narrow the scope of our owned and licensed patents. With respect to our patent portfolio, as of the date of this filing, we own, co-own or have exclusive rights to approximately 30 issued United States patents and approximately 35 issued foreign patents. We also own, co-own or have exclusive rights to approximately 35 pending United States patent applications and approximately 290 pending foreign patent applications. Our patent positions, and those of other biopharmaceutical, pharmaceutical and biotechnology companies, are generally uncertain and involve complex legal, scientific, and factual questions. The standards which the United States Patent and Trademark Office (“USPTO”) uses to grant patents, and the standards which courts use to interpret patents, are not always applied predictably or uniformly and can change, particularly as new technologies develop. Consequently, the level of protection, if any, that will be provided by our patents if we attempt to enforce them and they are challenged, is uncertain. In addition, the type and extent of patent claims that will be issued to us in the future is uncertain. Any patents that are issued may not contain claims that permit us to stop competitors from using similar technology. With respect to both in- licensed and owned intellectual property, we cannot predict whether the patent applications we and our licensors are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient protection from competitors or other third parties.

The patent prosecution process is expensive, time-consuming, and complex, and we may not be able to file, prosecute, maintain, enforce, or license all necessary or desirable patents and patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output in time to obtain patent protection. Although we enter into non-disclosure and confidentiality agreements with parties who have access to confidential or patentable aspects of our research and development output, such as our employees, corporate collaborators, outside scientific collaborators, contract research organizations, contract manufacturers, consultants, advisors and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection. In addition, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our inventions and the prior art allow our inventions to be patentable over the prior art. Furthermore, publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we or our licensors

were the first to make the inventions claimed in any of our owned or licensed patents or pending patent applications, or that we or our licensors were the first to file for patent protection of such inventions.

If the scope of any patent protection we obtain is not sufficiently broad, or if we lose any of our patent protection, our ability to prevent our competitors from commercializing similar or identical technology and product candidates would be adversely affected.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. As a result, the issuance, scope, validity, enforceability, and commercial value of our patent rights are highly uncertain. Our approximately 35 pending United States patent applications and approximately 290 pending foreign patent applications may not result in patents being issued which protect our product candidates or patents which effectively prevent others from commercializing competitive technologies and product candidates.

No consistent policy regarding the scope of claims allowable in patents in the biotechnology field has emerged in the United States. The patent situation outside of the United States is even more uncertain. Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our inventions and enforce our intellectual property rights, and more generally could affect the value of our intellectual property. In particular, our ability to stop third parties from making, using, selling, offering to sell, or importing products that infringe our intellectual property will depend in part on our success in obtaining and enforcing patent claims that cover our technology, inventions and improvements. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our products and the methods used to manufacture those products. Moreover, even our issued patents do not guarantee us the right to practice our technology in relation to the commercialization of our products. The area of patent and other intellectual property rights in biotechnology is an evolving one with many risks and uncertainties, and third parties may have blocking patents that could be used to prevent us from commercializing our patented product candidates and practicing our proprietary technology. Our issued patent and those that may issue in the future may be challenged, invalidated, or circumvented, which could limit our ability to stop competitors from marketing related products or limit the length of the term of patent protection that we may have for our product candidates. In addition, the rights granted under any issued patents may not provide us with protection or competitive advantages against competitors with similar technology. Furthermore, our competitors may independently develop similar technologies. For these reasons, we may have competition for our product candidates. Moreover, because of the extensive time required for development, testing and regulatory review of a potential product, it is possible that, before any particular product candidate can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby reducing any advantage of the patent.

Moreover, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Even if patent applications we own or license issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors or other third parties from competing with us, or otherwise provide us with any competitive advantage. Any patents that we own or in-license may be challenged, narrowed, circumvented, or invalidated by third parties. Consequently, we do not know whether our product candidates will be protectable or remain protected by valid and enforceable patents. Our competitors or other third parties may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner which could materially adversely affect our business, financial condition, results of operations and prospects.

The issuance of a patent is not conclusive as to its inventorship, scope, validity, or enforceability, and patents that we own or license may be challenged in the courts or patent offices in the United States and abroad. We or our licensors may be subject to a third party preissuance submission of prior art to the USPTO or to foreign patent authorities or become involved in opposition, derivation, revocation, reexamination, post-grant and inter partes review, or interference proceedings or other similar proceedings challenging our owned or licensed patent rights. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate or render unenforceable, our owned or in-licensed patent rights, allow third parties to commercialize our product candidates, and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. Moreover, we, or one of our licensors, may have to participate in interference proceedings declared by the USPTO to determine priority of invention or in post-grant challenge proceedings, such as oppositions in a foreign patent office, that challenge our or our licensor's priority of invention or other features of patentability with respect to our owned or in-licensed patents and patent applications. Such challenges may result in loss of patent rights, loss of exclusivity, or in patent claims being narrowed, invalidated, or held unenforceable, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our product candidates. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us.

In addition, given the amount of time required for the development, testing, and regulatory review of new product candidates, patents protecting such product candidates might expire before or shortly after such product candidates are commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

We may in the future co-own patent rights relating to future product candidates with third parties. Some of our in-licensed patent rights are, and may in the future be, co-owned with third parties. In addition, our licensors may co-own the patent rights we in-license with other third parties with whom we do not have a direct relationship. Our exclusive rights to certain of these patent rights are dependent, in part, on inter-institutional or other operating agreements between the joint owners of such patent rights, who are not parties to our license agreements. If our licensors do not have exclusive control of the grant of licenses under any such third-party co-owners' interest in such patent rights or we are otherwise unable to secure such exclusive rights, such co-owners may be able to license their rights to other third parties, including our competitors, and our competitors could market competing products and technology. In addition, we may need the cooperation of any such co-owners of our patent rights in order to enforce such patent rights against third parties, and such cooperation may not be provided to us. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

If we fail to comply with our obligations under our intellectual property licenses with third parties, we could lose license rights that are important to our business.

We are currently party to various intellectual property license agreements. These license agreements impose, and we expect that future license agreements may impose, various diligence, milestone payment, royalty, insurance and other obligations on us. These licenses typically include an obligation to pay an upfront payment, yearly maintenance payments and royalties on sales. If we fail to comply with our obligations under the licenses, the licensors may have the right to terminate their respective license agreements, in which event we might not be able to market any product that is covered by the agreements. Termination of the license agreements or reduction or elimination of our licensed rights may result in our having to negotiate new or reinstated licenses with less favorable terms, which could adversely affect our competitive business position and harm our business.

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

Filing, prosecuting and defending patents on our product candidates in all countries throughout the world would be prohibitively expensive. The requirements for patentability may differ in certain countries, particularly developing countries. For example, China has a heightened requirement for patentability, and specifically requires a detailed description of medical uses of a claimed drug. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection, but enforcement on infringing activities is inadequate. These products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biopharmaceuticals, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. In addition, certain countries in Europe and certain developing countries, including India and China, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In those countries, we may have limited remedies if our patents are infringed or if we are compelled to grant a license to our patents to a third party, which could materially diminish the value of those patents. This could limit our potential revenue opportunities. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license. Finally, our ability to protect and enforce our intellectual property rights may be adversely affected by unforeseen changes in foreign intellectual property laws.

Obtaining and maintaining our patent protection depends on compliance with various procedural, documentary, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to the USPTO and various foreign patent offices at various points over the lifetime of our patents and/or applications. We have systems in place to remind us to pay these fees, and we rely on our outside counsel or service providers to pay these fees when due. Additionally, the USPTO and various foreign patent offices require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with rules applicable to the particular jurisdiction. However, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If such an event were to occur, it could have a material adverse effect on our business. In addition, we are responsible for the payment of patent fees for patent rights that we have licensed from other parties.

If any licensor of these patents does not itself elect to make these payments, and we fail to do so, we may be liable to the licensor for any costs and consequences of any resulting loss of patent rights.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

Obtaining and enforcing patents in the biopharmaceutical industry involves both technological and legal complexity, and therefore, is costly, time-consuming and inherently uncertain. In addition, the United States has enacted and implemented wide-ranging patent reform legislation. Further, recent U.S. Supreme Court rulings have either narrowed the scope of patent protection available in certain circumstances or weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained.

For our U.S. patent applications containing a claim not entitled to priority before March 16, 2013, there is a greater level of uncertainty in the patent law. In September 2011, AIA was signed into law. The AIA includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications are prosecuted and also affect patent litigation. The USPTO has developed regulations and procedures to govern administration of the AIA, and many of the substantive changes to patent law associated with the AIA. It is not clear what other, if any, impact the AIA will have on the operation of our business. Moreover, the AIA and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business and financial condition.

An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned to a “first-inventor-to-file” system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. A third party that files a patent application in the USPTO after that date but before us could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by the third party. This requires us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Since patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to either (i) file any patent application related to our product candidates or (ii) invent any of the inventions claimed in our patents or patent applications.

Among some of the other changes introduced by the AIA are changes that limit where a patentee may file a patent infringement suit and providing opportunities for third parties to challenge any issued patent in the USPTO. This applies to all of our U.S. patents, even those issued before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal court necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action.

If we are unable to protect the confidentiality of our proprietary information, the value of our technology and products could be adversely affected.

In addition to patent protection, we also rely on other proprietary rights, including protection of trade secrets, and other proprietary information. To maintain the confidentiality of trade secrets and proprietary information, we enter into confidentiality agreements with our employees, consultants, collaborators and others upon the commencement of their relationships with us. These agreements require that all confidential information developed by the individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not disclosed to third parties. Our agreements with employees and our personnel policies also provide that any inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. However, we may not obtain these agreements in all circumstances, and individuals with whom we have these agreements may not comply with their terms. Thus, despite such agreement, such inventions may become assigned to third parties. In the event of unauthorized use or disclosure of our trade secrets or proprietary information, these agreements, even if obtained, may not provide meaningful protection, particularly for our trade secrets or other confidential information. To the extent that our employees, consultants or contractors use technology or know-how owned by third parties in their work for us, disputes may arise between us and those third parties as to the rights in related inventions. To the extent that an individual who is not obligated to assign rights in intellectual property to us is rightfully an inventor of intellectual property, we may need to obtain an assignment or a license to that intellectual property from that individual, or a third party or from that individual's assignee. Such assignment or license may not be available on commercially reasonable terms or at all.

Adequate remedies may not exist in the event of unauthorized use or disclosure of our proprietary information. The disclosure of our trade secrets would impair our competitive position and may materially harm our business, financial condition and results of operations. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to maintain trade secret protection could adversely affect our competitive business position. In addition, others may independently discover or develop our trade secrets and proprietary information, and the existence of our own trade secrets affords no protection against such independent discovery.

As is common in the biopharmaceutical industry, we employ individuals who were previously or concurrently employed at research institutions and/or other biopharmaceutical, biotechnology or pharmaceutical companies, including our competitors or potential competitors. We may be subject to claims that these employees, or we, have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers, or that patents and applications we have filed to protect inventions of these employees, even those related to one or more of our product candidates, are rightfully owned by their former or concurrent employer. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties.

We may have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biopharmaceutical, biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise improperly used or disclosed confidential information of these third parties or our employees' former employers. Further, we may be subject to ownership disputes in the future arising, for example, from conflicting obligations of consultants or others who are involved in developing our product candidates. We may also be subject to claims that former employees, consultants, independent contractors, collaborators or other third parties have an ownership interest in our patents or other intellectual property. Litigation may be necessary to defend against these and other claims challenging our right to and use of confidential and proprietary information. If we fail in defending any such claims, in addition to paying monetary damages, we may lose our rights therein. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees.

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties.

Our success will depend in part on our ability to operate without infringing the proprietary rights of third parties. Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our future approved products or impair our competitive position. In particular, the patent landscapes around the discovery, development, manufacture and commercial use of our product candidates are crowded.

Third parties may have or obtain valid and enforceable patents or proprietary rights that could block us from developing product candidates using our technology. Our failure to obtain a license to any technology that we require may materially harm our business,

financial condition and results of operations. Moreover, our failure to maintain a license to any technology that we require may also materially harm our business, financial condition, and results of operations. Furthermore, we would be exposed to a threat of litigation.

In the biopharmaceutical industry, significant litigation and other proceedings regarding patents, patent applications, trademarks and other intellectual property rights have become commonplace. The types of situations in which we may become a party to such litigation or proceedings include:

- we or our collaborators may initiate litigation or other proceedings against third parties seeking to invalidate the patents held by those third parties or to obtain a judgment that our products or processes do not infringe those third parties' patents;
- if our competitors file patent applications that claim technology also claimed by us or our licensors or licensees, we or our licensors or licensees may be required to participate in interference, derivation or other proceedings to determine the priority of invention, which could jeopardize our patent rights and potentially provide a third party with a dominant patent position;
- if third parties initiate litigation claiming that our processes or products infringe their patent or other intellectual property rights, we and our collaborators will need to defend against such proceedings; and
- if a license to necessary technology is terminated, the licensor may initiate litigation claiming that our processes or products infringe or misappropriate their patent or other intellectual property rights and/or that we breached our obligations under the license agreement, and we and our collaborators would need to defend against such proceedings.

These lawsuits would be costly and could affect our results of operations and divert the attention of our management and scientific personnel. There is a risk that a court would decide that we or our collaborators are infringing the third party's patents and would order us or our collaborators to stop the activities covered by the patents. In that event, we or our collaborators may not have a viable alternative to the technology protected by the patent and may need to halt work on the affected product candidate or cease commercialization of an approved product. In addition, there is a risk that a court will order us or our collaborators to pay the other party damages. An adverse outcome in any litigation or other proceeding could subject us to significant liabilities to third parties and require us to cease using the technology that is at issue or to license the technology from third parties. We may not be able to obtain any required licenses on commercially acceptable terms or at all. Any of these outcomes could have a material adverse effect on our business.

The biopharmaceutical industry has produced a significant number of patents, and it may not always be clear to industry participants, including us, which patents cover various types of products or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform or predictable. If we are sued for patent infringement, we would need to demonstrate that our products or methods either do not infringe the patent claims of the relevant patent or that the patent claims are invalid, and we may not be able to do this. Proving invalidity is difficult. For example, in the United States, proving invalidity requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents. Even if we are successful in these proceedings, we may incur substantial costs and divert management's time and attention in pursuing these proceedings, which could have a material adverse effect on us. If we are unable to avoid infringing the patent rights of others, we may be required to seek a license, defend an infringement action or challenge the validity of the patents in court. Patent litigation is costly and time consuming. We may not have sufficient resources to bring these actions to a successful conclusion. In addition, if we do not obtain a license, develop or obtain non-infringing technology, fail to defend an infringement action successfully or have infringed patents declared invalid, we may incur substantial monetary damages, encounter significant delays in bringing our product candidates to market and be precluded from manufacturing or selling our product candidates.

The cost of any patent litigation or other proceeding, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the cost of such litigation and proceedings more effectively than we can because of their substantially greater resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. Patent litigation and other proceedings may also absorb significant management time.

We may not identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent which might adversely affect our ability to develop and market our product candidates.

We cannot guarantee that any of our or our licensors' patent searches or analyses, including the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending patent application in the United States and abroad that is relevant to or necessary for the commercialization of our product candidates in any jurisdiction. For example, U.S. patent applications filed before

November 29, 2000 and certain U.S. patent applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Therefore, patent applications covering our product candidates could have been filed by third parties without our knowledge. Additionally, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our product candidates or the use of our product candidates. The scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our product candidates. We may incorrectly determine that our product candidates are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our product candidates.

If we fail to identify and correctly interpret relevant patents, we may be subject to infringement claims. We cannot guarantee that we will be able to successfully settle or otherwise resolve such infringement claims. If we fail in any such dispute, in addition to being forced to pay damages, which may be significant, we may be temporarily or permanently prohibited from commercializing any of our product candidates that are held to be infringing. We might, if possible, also be forced to redesign product candidates so that we no longer infringe the third-party intellectual property rights. Any of these events, even if we were ultimately to prevail, could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business and could adversely affect our business, financial condition, results of operations and prospects.

We may become involved in lawsuits to protect or enforce our patents, which could be expensive, time consuming and unsuccessful.

Third parties may infringe or misappropriate our intellectual property, including our existing patents, patents that may issue to us in the future, or the patents of our licensors or licensees to which we have a license. As a result, we may be required to file infringement claims to stop third-party infringement or unauthorized use. Further, we may not be able to prevent, alone or with our licensors or licensees, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States.

If we or one of our licensors or licensees were to initiate legal proceedings against a third party to enforce a patent covering our product candidates, the defendant could counterclaim that the patent covering our product candidates is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent.

In addition, within and outside of the United States, there has been a substantial amount of litigation and administrative proceedings, including interference and reexamination proceedings before the USPTO or oppositions and other comparable proceedings in various foreign jurisdictions, regarding patent and other intellectual property rights in the biopharmaceutical industry. Notably, the Leahy-Smith America Invents Act, or the American Invents Act ("AIA"), introduced new procedures, including inter partes review and post grant review. These procedures may be used by competitors to challenge the scope and/or validity of our patents, including those patents perceived by our competitors as blocking entry into the market for their products, and the outcome of such challenges.

Even after they have been issued, our patents and any patents which we license may be challenged, narrowed, invalidated or circumvented. If our patents are invalidated or otherwise limited or will expire prior to the commercialization of our product candidates, other companies may be better able to develop products that compete with ours, which could adversely affect our competitive business position, business prospects and financial condition.

The following are non-exclusive examples of litigation and other adversarial proceedings or disputes that we could become a party to involving our patents or patents licensed to us:

- we or our collaborators may initiate litigation or other proceedings against third parties to enforce our patent rights;
- third parties may initiate litigation or other proceedings seeking to invalidate patents owned by or licensed to us or to obtain a declaratory judgment that their product or technology does not infringe our patents or patents licensed to us;
- third parties may initiate opposition proceedings, post-grant review, inter partes review, or reexamination proceedings challenging the validity or scope of our patent rights, requiring us or our collaborators and/or licensors or licensees to

participate in such proceedings to defend the validity and scope of our patents;

- there may be a challenge or dispute regarding inventorship or ownership of patents currently identified as being owned by or licensed to us;
- the USPTO may initiate an interference or derivation proceeding between patents or patent applications owned by or licensed to us and those of our competitors, requiring us or our collaborators and/or licensors or licensees to participate in an interference or derivation proceeding to determine the priority of invention, which could jeopardize our patent rights; or
- third parties may seek approval to market biosimilar versions of our future approved products prior to expiration of relevant patents owned by or licensed to us, requiring us to defend our patents, including by filing lawsuits alleging patent infringement.

These lawsuits and proceedings would be costly and could affect our results of operations and divert the attention of our managerial and scientific personnel. There is a risk that a court or administrative body could decide that our patents are invalid or not infringed by a third party's activities, or that the scope of certain issued claims must be further limited. An adverse outcome in a litigation or proceeding involving our own patents could limit our ability to assert our patents against these or other competitors, affect our ability to receive royalties or other licensing consideration from our licensees, and may curtail or preclude our ability to exclude third parties from making, using and selling similar or competitive products. An adverse outcome may also put our pending patent applications at risk of not issuing, or issuing with limited and potentially inadequate scope to cover our product candidates. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. Additionally, it is also possible that prior art of which we are aware, but which we do not believe affects the validity or enforceability of a claim, may, nonetheless, ultimately be found by a court of law or an administrative panel to affect the validity or enforceability of a claim, for example, if a priority claim is found to be improper. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we could lose at least part, and perhaps all, of the patent protection on our relevant product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, during the course of litigation or administrative proceedings, there could be public announcements of the results of hearings, motions or other interim proceedings or developments or public access to related documents. If investors perceive these results to be negative, the market price for our common stock could be significantly harmed. Any of these occurrences could adversely affect our competitive business position, business prospects, and financial condition.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage. The degree of future protection for our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. For example:

- others may be able to develop a platform that is similar to, or better than, ours in a way that is not covered by the claims of our patents;
- others may be able to make compounds that are similar to our product candidates but that are not covered by the claims of our patents;
- we might not have been the first to make the inventions covered by patents or pending patent applications;
- we might not have been the first to file patent applications for these inventions;
- any patents that we obtain may not provide us with any competitive advantages or may ultimately be found invalid or unenforceable; or
- we may not develop additional proprietary technologies that are patentable.

If we do not obtain patent term extension and/or data exclusivity for any product candidates we may develop, our business may be materially harmed.

Depending upon the timing, duration and specifics of any FDA marketing approval of any product candidates we may develop, one or more of our owned or in-licensed U.S. patents may be eligible for limited patent term extension under the Hatch-Waxman Act. The Hatch-Waxman Act permits a patent term extension of up to five years as compensation for patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years

from the date of product approval, only one patent may be extended and only those claims covering the approved drug, a method for using it, or a method for manufacturing it may be extended. Similar extensions as compensation for patent term lost during regulatory review processes are also available in certain foreign countries and territories, such as in Europe under a Supplementary Patent Certificate. However, we may not be granted an extension in the United States and/or foreign countries and territories because of, for example, failing to exercise due diligence during the testing phase or regulatory review process, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents, or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or the term of any such extension is shorter than what we request, our competitors may obtain approval of competing products following our patent expiration, and our business, financial condition, results of operations and prospects could be materially harmed.

We may be subject to claims challenging the inventorship of our patents and other intellectual property.

We or our licensors may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patent rights, trade secrets, or other intellectual property as an inventor or co-inventor. For example, we or our licensors may have inventorship disputes arise from conflicting obligations of employees, consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship or our licensors' ownership of our owned or in-licensed patent rights, trade secrets or other intellectual property. If we or our licensors fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, intellectual property that is important to our product candidates. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest. At times, competitors or other third parties may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. We also have partners who may market or refer to our trademarks or trade names and may use the trademarks or trade names in ways that impair our branding strategy. Recepta has rights to balstilimab and zalifrelimab in certain South American countries and may adopt a marketing strategy, including use of trademarks and tradenames, that could impair our brand identity and possibly cause market confusion. If we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our business, financial condition, results of operations and prospects.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make products that are similar to our product candidates or utilize similar technology but that are not covered by the claims of the patents that we license or may own;
- we, or our current or future licensors or collaborators, might not have been the first to make the inventions covered by the issued patent or pending patent application that we license or own now or in the future;
- we, or our current or future licensors or collaborators, might not have been the first to file patent applications covering certain of our or their inventions;

- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our owned or licensed intellectual property rights;
- it is possible that our current or future pending owned or licensed patent applications will not lead to issued patents;
- issued patents that we hold rights to may be held invalid or unenforceable, including as a result of legal challenges by our competitors or other third parties;
- our competitors or other third parties might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file a patent in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property.

Should any of these events occur, they could have a material adverse effect on our business, financial condition, results of operations and prospects.

Risks Related to Business Operations, Employee Matters and Managing Growth

We have undergone significant growth across multiple locations over the past few years, and are focusing on further enhancing core areas and capabilities as we move toward commercialization. In addition, we have consolidated certain sites while expanding others to focus on our core priorities and future needs. We may encounter difficulties in managing these growth and/or consolidation efforts, either of which could disrupt our operations.

Over the past few years we have more than tripled our headcount, in part through various acquisitions and the expansion of our research and development activities both nationally and internationally. While we have restructured our organization over the past few years, we expect to continue increasing our headcount in certain core areas as we continue to build our development, manufacturing and commercialization capabilities and integrate our acquired technology platforms. To manage these organizational changes, we must continue to implement and improve our managerial, operational and financial systems and continue to recruit, train and retain qualified personnel. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our timelines may be delayed, our ability to generate revenue could be reduced, and we may not be able to implement our business strategy.

As part of our efforts to optimize efficiency across our organization, we closed our Jena, Germany office in 2016 and consolidated these operations in the UK and Switzerland. In 2017, we completed a reduction in force in our Lexington, MA facility, which included certain members of our management, in line with our prioritization efforts, and we closed our office in Basel, Switzerland and transferred our research and development assets and capabilities there to the UK. In January 2020, our subsidiary AgenTus closed its Waterloo, Belgium office and consolidated those operations in our Lexington, MA facility. In March 2020, as a result of the COVID-19 pandemic, we completed a company-wide reduction in force. If these transition efforts prove to be unsuccessful, or if we identify management or operational gaps in connection with our changes, it could cause delays in discovery timelines and increased costs for certain of our internal and partnered programs, which also could have an adverse effect on our business, financial condition and results of operations. We are still in the process of liquidating 4-AB and transferring intellectual property rights from Switzerland to the United States or elsewhere. There could be adverse tax consequences resulting from this migration of intellectual property rights, which could have an adverse effect on our business and operations.

Product liability and other claims against us may reduce demand for our products and/or result in substantial damages.

We face an inherent risk of product liability exposure related to testing our product candidates in human clinical trials and manufacturing antibodies in our Berkeley, CA facility and may face even greater risks if we ever sell products commercially. An individual may bring a product liability claim against us if one of our product candidates causes, or merely appears to have caused, an injury. Product liability claims may result in:

- regulatory investigations;
- injury to our reputation;
- withdrawal of clinical trial volunteers;
- costs of related litigation;
- substantial monetary awards to plaintiffs; and
- decreased demand for any future products.

We manufacture the Prophage vaccines from a patient's cancer cells, and medical professionals must inject the vaccines into the same patient from which they were manufactured. A patient may sue us if a hospital, a shipping company, or we fail to receive the removed cancer tissue or deliver that patient's vaccine. We do not have any other insurance that covers loss of or damage to the Prophage vaccines or tumor material, and we do not know whether such insurance will be available to us at a reasonable price or at all. We have limited product liability coverage for use of our product candidates. Our product liability policy provides \$10.0 million aggregate coverage and \$10.0 million per occurrence coverage. This limited insurance coverage may be insufficient to fully cover us for future claims.

We are also subject to laws generally applicable to businesses, including but not limited to, federal, state and local wage and hour, employee classification, mandatory healthcare benefits, unlawful workplace discrimination and whistle-blowing. Any actual or alleged failure to comply with any regulation applicable to our business or any whistle-blowing claim, even if without merit, could result in costly litigation, regulatory action or otherwise harm our business, results of operations, financial condition, cash flow and future prospects.

We are highly reliant on certain members of our management team. In addition, we have limited internal resources and if we fail to recruit and/or retain the services of key employees and external consultants as needed, we may not be able to achieve our strategic and operational objectives.

Both Garo H. Armen, Ph.D., the Chairman of our Board of Directors and our Chief Executive Officer who co-founded the Company in 1994, and Jennifer Buell, Ph.D., our President and Chief Operating Officer, are integral to building our company and developing our technology. If either Dr. Armen or Dr. Buell is unable or unwilling to continue his or her relationship with Agenus, our business may be adversely impacted. We have employment agreements with Dr. Armen and Dr. Buell. They both play an important role in our day-to-day activities, and we do not carry key employee insurance policies for Dr. Armen, Dr. Buell or any other employee. The loss of the services of Dr. Armen or Dr. Buell, other key employees, and other scientific and medical advisors, and our inability to find suitable replacements could result in delays in product development and harm our business.

The bulk of our operations are conducted at our facilities in Cambridge, UK, Lexington, MA and Berkeley, CA. The Cambridge, New England and Northern California regions are headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel in our market is intense and may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all.

Our future growth success depends to a significant extent on the skills, experience and efforts of our executive officers and key members of our clinical and scientific staff. We face intense competition for qualified individuals from other pharmaceutical, biopharmaceutical and biotechnology companies, as well as academic and other research institutions. To attract and retain employees at our company, in addition to salary and cash incentives, we have provided stock options that vest over time. The value to employees of stock options that vest over time may be significantly affected by movements in our stock price that are beyond our control, and may at any time be insufficient to counteract more lucrative offers from other companies. Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us on short notice. Employment of our key employees is at-will, which means that any of our employees could leave our employment at any time, with or without notice. We may be unable to retain our current personnel or attract or assimilate other highly qualified management and clinical personnel in the future on acceptable terms. The loss of any or all of these individuals could harm our business and could impair our ability to support our collaboration partners or our growth generally.

Our internal computer systems, or those of our third-party CROs, CMOs, licensees, collaborators or other contractors or consultants, may fail or suffer security breaches, which could result in a material disruption in our business and operations or could subject us to sanctions and penalties that could have a material adverse effect on our reputation or financial condition.

Despite the implementation of security measures, our internal computer systems and those of our current and future CROs, CMOs, licensees, collaborators and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. Potential vulnerabilities can also be exploited from inadvertent or intentional actions of our employees, third-party vendors, business partners, or by malicious third parties. Attacks of this nature are increasing in their frequency, levels of persistence, sophistication and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives (including, but not limited to, industrial espionage) and expertise, including organized criminal groups, “hacktivists,” nation states and others. In addition to the extraction of sensitive information, such attacks could include the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information. In addition, the prevalent use of mobile devices increases the risk of data security incidents. While we are not aware of any such material system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed, on-going or future clinical trials could result in delays in our regulatory approval efforts and significant costs to recover or reproduce the data. Likewise, we rely on third parties to manufacture certain of our drug candidates and conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liabilities and the further development and commercialization of our product candidates could be delayed. We do not maintain cyber liability insurance, and would therefore have no coverage for any losses resulting from any data security incident.

We use and store customer, vendor, employee and business partner and, in certain instances patient, personally identifiable information in the ordinary course of our business. We are subject to various domestic and international privacy and security regulations, including but not limited to the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), which mandates, among other things, the adoption of uniform standards for the electronic exchange of information in common healthcare transactions, as well as standards relating to the privacy and security of individually identifiable health information, which require the adoption of administrative, physical and technical safeguards to protect such information. In addition, many states have enacted comparable laws addressing the privacy and security of health information, some of which are more stringent than HIPAA. Failure to comply with these standards, or a computer security breach or cyber-attack that affects our systems or results in the unauthorized release of proprietary or personally identifiable information, could subject us to criminal penalties and civil sanctions, and our reputation could be materially damaged, and our operations could be impaired. We may also be exposed to a risk of loss or litigation and potential liability, which could have a material adverse effect on our business, results of operations and financial condition.

Natural or man-made calamities, or public health crises, could disrupt our business and materially adversely affect our operations and those of our strategic partners.

Our operations, and those of our CROs, CMOs, and other contractors and consultants together with regulatory agencies such as the FDA or EMA, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters or business interruptions. The occurrence of any of these business disruptions could prevent us, or our collaborators and business partners or regulators, from using all or a significant portion of our, or their, facilities or disrupt our supply chain, and, it may be difficult or, in certain cases, impossible for us to continue certain activities, such as for example our manufacturing capabilities, for a substantial period of time. The disaster recovery and business continuity plans we have in place currently are limited and are unlikely to prove adequate in the event of a serious disaster or similar event. We may incur substantial expenses and delays as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business. We rely in part on third-party manufacturers to produce and process some of our product candidates. Our ability to obtain some of our clinical supplies of our product candidates could be disrupted if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption.

We own an antibody pilot plant manufacturing facility and lease additional office space in Berkeley, CA. This location is in an area of seismic activity near active earthquake faults and active wildfire activity. In October 2019, Pacific Gas and Electric Company (“PG&E”), the utility supplier for our Berkeley, CA facility provided notice to all residents and businesses in Alameda County (where Berkeley, CA is located) that it would shut off power to the county for a multiday period due to the risk of wildfires. The emergency backup generators located at our Berkeley, CA facility are not able to power the entire facility and only have enough fuel capacity to provide emergency power for a few hours. We have plans in place to maintain the fuel supply of our generators in the event of an

extended power interruption, but there is no guarantee that such plans will be adequate to maintain emergency power at our Berkeley, CA facility. In addition, many of our employees reside in Alameda County and may be unable to leave home for the duration of any power shut off. While PG&E did not shut off power to our facility in October 2019, PG&E may do so in the future on short notice.

In March 2020, we put in place a number of protective measures in response to the COVID-19 outbreak that was declared a pandemic by the World Health Organization. These measures include cancelling all commercial business travel, requesting employees to limit non-essential personal travel, asking some employees to self-quarantine at home, adjusting our facilities janitorial and sanitary policies, encouraging employees to work from home to the extent their job function enables them to do so and staggering the working hours of employees that are unable to perform their duties remotely. We are revisiting these measures on a daily basis as the situation evolves, and we are likely to take additional action as we learn more and as instruction is provided by national, state and local governmental agencies. These measures have resulted, and any future actions are likely to result, in a disruption to our business. Our employees are also impacted by the closures of their children's schools for lengthy periods of time. For instance, in both California and Massachusetts, all public and private elementary and secondary schools have been ordered to closed for the duration of the academic year, leaving many of our employees with no choice but to work from home and care for their children at the same time. In addition, in March 2020, the United States government announced that it would suspend air travel between the United States and parts of Europe for a 30-day period and subsequently revised this suspension to include the UK, where we have an office and employees. In the event the governments in Massachusetts, California or the UK further extend their shelter in place orders or otherwise prohibit employees from going to work for a longer period of time, our business will be disrupted and our programs and timelines are likely to be delayed, depending on the ultimate length and severity of the mandate. Not all of our employees are able to perform their duties or function remotely.

The operations of our strategic partners could also be impacted by calamities or public health crises, which could materially adversely affect our cash resources and operations. At the beginning of 2020, we projected receipt of approximately \$60.0 million of cash milestone payments from existing partners before the end of the year. Although we did receive \$15.0 million of this in the first half of 2020, as a result of the impact of COVID-19 on our partner's programs and trials, the remaining \$45.0 million is now delayed and unlikely to be received this year, which impacts our cash runway and ability to fund our operations. Additional delays resulting from COVID-19 or other crises are likely to materially adversely affect our business.

Failure to realize the anticipated benefits of our strategic acquisitions and licensing transactions could adversely affect our business, operations and financial condition.

An important part of our business strategy has been to identify and advance a pipeline of product candidates by acquiring and in-licensing product candidates, technologies and businesses that we believe are a strategic fit with our existing business. Since we acquired 4-AB in 2014, we have completed numerous additional strategic acquisitions and licensing transactions. The ultimate success of these strategic transactions entails numerous operational and financial risks, including:

- higher than expected development and integration costs;
- difficulty in combining the technologies, operations and personnel of acquired businesses with our technologies, operations and personnel;
- exposure to unknown liabilities;
- difficulty or inability to form a unified corporate culture across multiple office sites both nationally and internationally;
- inability to retain key employees of acquired businesses;
- disruption of our business and diversion of our management's time and attention; and
- difficulty or inability to secure financing to fund development activities for such acquired or in-licensed product candidates, technologies or businesses.

We have limited resources to integrate acquired and in-licensed product candidates, technologies and businesses into our current infrastructure, and we may fail to realize the anticipated benefits of our strategic transactions. Any such failure could have an adverse effect on our business, operations and financial condition.

We intend to advance our cell therapy business through our subsidiary, AgenTus Therapeutics, eventually with separate funding. Moving intellectual property assets into AgenTus Therapeutics in foreign jurisdictions could have adverse tax consequences, and there is no guarantee that we will be able to attract external funding. Moreover, even if the business is funded, there is no guarantee that it will be successful.

We are currently in the process of pursuing external funding and partnership opportunities to advance AgenTus Therapeutics, but Agenus is currently funding such operations. There is no guarantee that external funding will be available. If funding is available, there is no guarantee that it will be on attractive or acceptable terms, or that it will be adequate to advance the business to an inflection point for additional funding, including any potential initial public offering. Similarly, there is no guarantee that partnership opportunities will be available on attractive terms, if at all. If external funding is not available, we may be forced to either retire these programs or continue to use internal resources to advance them. In addition, our cell therapy assets are pre-clinical. Even if adequate funding and partnership opportunities are available, there is no guarantee that we or AgenTus Therapeutics will be successful in advancing one or more product candidates into and through clinical development. In addition, most of the efforts being made on behalf of AgenTus Therapeutics are being led by a separate AgenTus chief executive officer, utilizing several members of Agenus' management team and Agenus' internal general and administrative resources. The current structure could distract management and divert Agenus resources from Agenus' own core pipeline and programs.

The cell therapy assets necessary to enable AgenTus Therapeutics are currently owned or controlled by Agenus in the United States and Switzerland. In connection with capitalizing AgenTus Therapeutics, these assets will be transferred or licensed to new legal entities within the United States and Europe and potentially others. Transferring these assets or licensing them on an exclusive basis would require that taxes be paid based on the fair market value of the assets. We may not have adequate net operating losses to offset any tax liabilities in the relevant jurisdictions. Moreover, we have previously disclosed our interest in potentially issuing a tax-free dividend to Agenus' stockholders in the form of stock of AgenTus Therapeutics. There is no guarantee that any such dividend will be tax-free or that it will be issued at all, or the timing thereof. If we issue a dividend in the form of stock, there could be adverse tax consequences for certain of our stockholders.

Risks Related to our Common Stock

Our stock has historically had low trading volume, and its public trading price has been volatile.

During the period from our initial public offering on February 4, 2000 to March 31, 2020, and the three months ended March 31, 2020, the closing price of our common stock has fluctuated between \$1.59 (or \$0.27 pre-reverse stock split) and \$315.78 (or \$52.63 pre-reverse stock split) per share and \$1.92 and \$4.39 per share, respectively. The average daily trading volume for the three months ended March 31, 2020 was approximately 2,123,229 shares, while the average daily trading volume for the year ended December 31, 2019 was approximately 1,191,940 shares. The market may experience significant price and volume fluctuations that are often unrelated to the operating performance of individual companies. In addition to general market volatility, many factors may have a significant adverse effect on the market price of our stock, including:

- continuing operating losses, which we expect over the next several years as we continue our development activities;
- announcements of decisions made by public officials or delays in any such announcements;
- results of our pre-clinical studies and clinical trials or delays in anticipated timing;
- delays in our regulatory filings or those of our partners;
- announcements of new collaboration agreements with strategic partners or developments by our existing collaboration partners;
- announcements of acquisitions;
- announcements of technological innovations, new commercial products, failures of products, or progress toward commercialization by our competitors or peers;
- failure to realize the anticipated benefits of acquisitions;
- developments concerning proprietary rights, including patent and litigation matters;
- publicity regarding actual or potential results with respect to product candidates under development;
- quarterly fluctuations in our financial results, including our average monthly cash used in operating activities;
- variations in the level of expenses related to any of our product candidates or clinical development programs;

- additions or departures of key management or scientific personnel;
- conditions or trends in the biopharmaceutical, biotechnology and pharmaceutical industries generally;
- other events or factors, including those resulting from war, incidents of terrorism, natural disasters or responses to these events;
- changes in accounting principles;
- general economic and market conditions and other factors that may be unrelated to our operating performance or the operating performance of our competitors, including changes in market valuations of similar companies; and
- sales of common stock by us or our stockholders in the future, as well as the overall trading volume of our common stock.

In the past, securities class action litigation has often been brought against a company following a significant decline in the market price of its securities. This risk is especially relevant for us because many biopharmaceutical, biotechnology and pharmaceutical companies experience significant stock price volatility.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who covers us downgrades our stock, or publishes inaccurate or unfavorable research about our business, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, demand for our stock could decrease, which could cause our stock price and trading volume to decline.

We are a “Smaller Reporting Company”, and the reduced reporting requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

We qualify as a Smaller Reporting Company (“SRC”) under the SEC rules and are able to take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not SRCs, including a shorter look back period for management’s discussion and analysis of financial condition and results of operations, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding nonbinding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved. So long as we meet the definition of SRC, we can maintain our SRC status indefinitely.

We cannot predict if investors will find our common stock less attractive because we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We do not intend to pay cash dividends on our common stock and, consequently your ability to obtain a return on your investment will depend on appreciation in the price of our common stock.

We have never declared or paid any cash dividend on our common stock and do not intend to do so in the foreseeable future. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business. Therefore, the success of an investment in shares of our common stock will depend upon any future appreciation in their value. There is no guarantee that shares of our common stock will appreciate in value or maintain their current value.

Failure to maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act of 2002 and to comply with changing regulation of corporate governance and public disclosure could have a material adverse effect on our operating results and the price of our common stock.

The Sarbanes-Oxley Act of 2002 and rules adopted by the SEC and Nasdaq have resulted in significant costs to us. In particular, our efforts to comply with Section 404 of the Sarbanes-Oxley Act of 2002 and related regulations regarding the required assessment of our internal control over financial reporting, and our independent registered public accounting firm’s audit of internal control over financial reporting, have required commitments of significant management time. We expect these commitments to continue.

Our internal control over financial reporting (as defined in Rules 13a-15 of the Exchange Act) is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with U.S. GAAP. Because of its inherent limitations, internal control over financial reporting may not prevent or detect all deficiencies or weaknesses in our financial reporting. While our management has concluded that there were no material weaknesses in our internal control over financial reporting as of December 31, 2019, our procedures are subject to the risk

that our controls may become inadequate because of changes in conditions or as a result of a deterioration in compliance with such procedures. No assurance is given that our procedures and processes for detecting weaknesses in our internal control over financial reporting will be effective.

Changing laws, regulations and standards relating to corporate governance and public disclosure, are creating uncertainty for companies. Laws, regulations and standards are subject to varying interpretations in some cases due to their lack of specificity, and as a result, their application in practice may evolve over time as new guidance is provided, which could result in continuing uncertainty regarding compliance matters and higher costs caused by ongoing revisions to disclosure and governance practices. If we fail to comply with these laws, regulations and standards, our reputation may be harmed, and we might be subject to sanctions or investigation by regulatory authorities, such as the SEC. Any such action could adversely affect our operating results and the market price of our common stock.

The sale of a significant number of shares could cause the market price of our stock to decline.

The sale by us or the resale by stockholders of a significant number of shares of our common stock could cause the market price of our common stock to decline. As of May 7, 2020, we had 169,776,816 shares of common stock outstanding. Substantially all of these shares are eligible for sale on Nasdaq, although certain of the shares are subject to sales volume and other limitations. We have filed registration statements to permit the sale of approximately 36,000,000 shares of common stock under our equity incentive plans, and to permit the sale of 1,500,000 shares of common stock under our 2015 Inducement Equity Plan. We have also filed registration statements to permit the sale of approximately 667,000 shares of common stock under our Employee Stock Purchase Plan, to permit the sale of 425,000 shares of common stock under our Directors' Deferred Compensation Plan, to permit the sale of approximately 31,100,319 shares of common stock pursuant to various private placement agreements and to permit the sale of up to 50,000,000 shares of our common stock pursuant to our At Market Issuance Sales Agreement. As of May 7, 2020, an aggregate of approximately 41,672,749 of these shares remained available for sale. In October 2018, we completed a private placement of 18,459 shares of Series C-1 convertible preferred stock, convertible into 18,459,000 shares of common stock. The resale of all 18,459,000 shares of common stock underlying the 18,459 shares of Series C-1 convertible preferred stock was registered with the SEC pursuant to a Registration Statement on Form S-3 filed with the SEC on November 8, 2018 and declared effective on December 10, 2018. As part of our collaboration with Gilead, we completed a private placement of 11,111,111 shares of common stock in January 2019, and on October 25, 2019, we filed a Registration Statement on Form S-3 to register the resale of these shares by Gilead, as required under our agreement. In connection with our acquisition of 4-AB in February 2014, we are obligated to make contingent milestone payments to the former shareholders of 4-AB, payable in cash or shares of our common stock at our option, as follows (i) \$10.0 million upon our market capitalization exceeding \$750.0 million for 30 consecutive trading days prior to the earliest of (a) February 12, 2024, (b) the sale of 4-AB or (c) the sale of Agenus and (ii) \$10.0 million upon our market capitalization exceeding \$1.0 billion for 30 consecutive trading days prior to the earliest of (a) February 12, 2024, (b) the sale of 4-AB or (c) the sale of Agenus. In connection with our acquisition of PhosImmune in December 2015, we issued 1,631,521 shares of our common stock to the shareholders of PhosImmune and other third parties having a fair market value of approximately \$7.4 million at closing. In addition, we may be obligated in the future to pay certain contingent milestones payments, payable at our election in cash or shares of our common stock of up to \$35.0 million in the aggregate. If we elect to pay any of these contingent milestones in shares, we are obligated to file registration statements covering any such shares. The market price of our common stock may decrease based on the expectation of such sales.

As of March 31, 2020, warrants to purchase approximately 2,025,000 shares of our common stock with a weighted average exercise price per share of \$4.89 were outstanding.

As of March 31, 2020, options to purchase 27,707,257 shares of our common stock with a weighted average exercise price per share of \$3.66 were outstanding. These options are subject to vesting that occurs over a period of up to four years following the date of grant. As of March 31, 2020, we had 13,091,335 vested options and 887,632 non-vested shares outstanding.

As of March 31, 2020, our outstanding shares of Series A-1 Convertible Preferred Stock were convertible into 333,333 shares of our common stock.

As of March 31, 2020, our outstanding shares of Series C-1 Convertible Preferred Stock were convertible into 12,459,000 shares of our common stock.

We may issue additional common stock, preferred stock, restricted stock units, or securities convertible into or exchangeable for our common stock. Furthermore, substantially all shares of common stock for which our outstanding stock options or warrants are exercisable are, once they have been purchased, eligible for immediate sale in the public market. The issuance of additional common stock, preferred stock, restricted stock units, or securities convertible into or exchangeable for our common stock or the exercise of stock options or warrants would dilute existing investors and could adversely affect the price of our securities. In addition, such securities may have rights senior to the rights of securities held by existing investors.

Anti-takeover provisions under our charter documents and Delaware law could delay or prevent a change of control which could limit the market price of our common stock and may prevent or frustrate attempts by our stockholders to replace or remove our current management.

Our certificate of incorporation and bylaws contain provisions that could make it more difficult for a third party to acquire us without the consent of our Board of Directors. Our certificate of incorporation provides for a staggered board and removal of directors only for cause. Accordingly, stockholders may elect only a minority of our Board at any annual meeting, which may have the effect of delaying or preventing changes in management. In addition, under our certificate of incorporation, our Board of Directors may issue additional shares of preferred stock and determine the terms of those shares of stock without any further action by our stockholders. Our issuance of additional preferred stock could make it more difficult for a third party to acquire a majority of our outstanding voting stock and thereby effect a change in the composition of our Board of Directors. Our certificate of incorporation also provides that our stockholders may not take action by written consent. Our bylaws require advance notice of stockholder proposals and director nominations and permit only our president or a majority of the Board of Directors to call a special stockholder meeting. These provisions may have the effect of preventing or hindering attempts by our stockholders to replace our current management. In addition, Delaware law prohibits a corporation from engaging in a business combination with any holder of 15% or more of its capital stock until the holder has held the stock for three years unless, among other possibilities, the board of directors approves the transaction. Our Board of Directors may use this provision to prevent changes in our management. Also, under applicable Delaware law, our Board of Directors may adopt additional anti-takeover measures in the future.

These anti-takeover provisions and other provisions in our certificate of incorporation and bylaws could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors and could also delay or impede a merger, tender offer or proxy contest involving our company. These provisions could also discourage proxy contests and make it more difficult for our stockholders and other stockholders to elect directors of their choosing or cause us to take other corporate actions they desire. Any delay or prevention of a change of control transaction or changes in our board of directors could cause the market price of our common stock to decline.

We have broad discretion in the use of our existing cash, cash equivalents and investments and may not use them effectively.

Our management has broad discretion in the application of our cash, cash equivalents and investments. Because of the number and variability of factors that will determine our use of our cash, cash equivalents and investments, their ultimate use may vary substantially from their currently intended use. Our management might not apply our cash, cash equivalents and investments in ways that ultimately increase the value of our stockholders investment. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest our cash in short-term, investment- grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not use our resources in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

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

The trading market for our common stock depends in part on the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

Item 5. Other Information

On May 8, 2020, Agenus, and on May 4, 2020, Agenus' subsidiaries Agenus West, LLC ("Agenus West") and AgenTus Therapeutics, Inc. ("AgenTus", and collectively with Agenus and Agenus West, the "Borrowers"), entered into Promissory Notes with Bank of America, NA for aggregate loan proceeds of \$6,196,809 (collectively, the "Loan") under the Small Business Administration (the "SBA") Paycheck Protection Program of the Coronavirus Aid, Relief and Economic Security Act of 2020 (the "CARES Act"). The Borrowers intend to use the Loan proceeds for covered payroll costs, rent and utilities in accordance with the relevant terms and conditions of the CARES Act.

In order to obtain the Loan, the Borrowers certified that "current economic uncertainty makes this loan request necessary to support the ongoing operations of the Applicant." In making such certifications, the Borrowers' considered, among other things, (i) Agenus' status as a pre-commercial biotechnology company with no recurring revenue or income or other committed funding; (ii) Agenus' limited cash runway, which as reported in this Quarterly Report on Form 10-Q, is currently only expected to satisfy its

liquidity requirements through the fourth quarter of 2020; (iii) Agenus' previously announced cash preservation measures, including its March 2020 restructuring and Dr. Armen's election to receive his salary in stock, rather than cash, for the balance of 2020; (iv) Agenus' expectation that, as a result of the COVID-19 pandemic, approximately \$45.0 million of cash milestone payments that it was expecting to receive from existing partners in 2020 will likely be delayed; and (v) the uncertain business environment.

Each Loan has a two-year term and bears interest at a rate of 1.00% per annum. Monthly principal and interest payments, less the amount of any potential forgiveness (discussed below), will commence on the 6-month anniversary of the receipt of Loan proceeds. The Borrowers did not provide any collateral or guarantees for the Loan, nor did the Borrowers pay any facility charge to obtain the Loan. Each Promissory Note provides for customary events of default, including, among others, those relating to failure to make payment, bankruptcy, breaches of representations and material adverse effects. Each Borrower may prepay the Loan at any time without incurring any prepayment charges.

The Loan may be forgiven partially or fully if the Loan proceeds are used for covered payroll costs, rent and utilities, provided that such amounts are incurred during the eight-week period commencing on receipt of the Loan proceeds, and at least 75% of any forgiven amount has been used for covered payroll costs. Any forgiveness of the Loan will be subject to approval by the SBA and will require the Borrowers to apply for such treatment in the future.

Item 6. Exhibits

<u>Exhibit No.</u>	<u>Description</u>
4.1	Amendment to Notes and Warrants dated as of February 18, 2020 by and among Agenus Inc. and the Investors listed therein. Filed as Exhibit 4.7 to our Annual Report on Form 10-K (File No. 0-29089) for the year ended December 31, 2019 and incorporated herein by reference.
4.2	Form of Warrant under the Amended and Restated Note Purchase Agreement dated as of February 18, 2020. Filed as Exhibit 4.8 to our Annual Report on Form 10-K (File No. 0-29089) for the year ended December 31, 2019 and incorporated herein by reference.
10.1	Consulting Agreement dated January 1, 2020 between Agenus Inc. and Brian Corvese. Filed herewith.
31.1	Certification of Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended. Filed herewith.
31.2	Certification of Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended. Filed herewith.
32.1	Certification of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. Submitted herewith.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Label Linkbase Document
101.PRE	XBRL Taxonomy Presentation Linkbase Document

AGENUS INC.

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.

Date: May 11, 2020

AGENUS INC.

/s/ CHRISTINE M. KLASKIN

Christine M. Klaskin
VP, Finance, Principal Financial Officer, Principal
Accounting Officer

CONSULTING AGREEMENT

This Consulting Agreement (the “Agreement”), effective as of January 1, 2020 (the “Effective Date”), is made between Agenus Inc., a Delaware corporation, having an address at 149 Fifth Avenue, Suite 500, New York, NY 10010 (“Agenus”), and Brian Corvese, an individual having an address at PO Box 49, Westport, CT 06881 (the “Consultant”) (each a “Party” and collectively the “Parties”).

WHEREAS, Consultant is a member of Agenus’ Board of Directors, and Agenus desires to retain the services of Consultant to perform additional services for Agenus.

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Agenus and Consultant hereby agree as follows:

1. Services.

- 1.1 Description of Services. Subject to the terms and conditions of this Agreement, Agenus or its designee hereby retains Consultant to perform for Agenus and/or potentially its Affiliates (as hereinafter defined) services as may be requested by Agenus’ CEO from time to time in-between scheduled board meetings (the “Services”). Consultant shall perform the Services promptly and in compliance with the provisions of this Agreement and all applicable laws, rules and regulations, including if applicable, laws and regulations administered by the

U.S. Food and Drug Administration (“FDA”) regarding the promotion and marketing of pharmaceutical products. Consultant shall ensure that the Services are performed promptly and diligently.

As used in this Agreement “Affiliate” means any corporation, firm, partnership or other entity, which controls, is controlled by or is under common control with a Party. As used in this Agreement, “control” means direct or indirect ownership of fifty percent (50%) or more of the outstanding stock or other voting rights entitled to elect directors thereof or the ability to otherwise control the management of the corporation, firm, partnership or other entity.

- 1.2 Non-Solicitation. Consultant agrees that during the term of this Agreement and for a period of one (1) year thereafter, Consultant shall not, directly or indirectly, (i) solicit, divert, or take away, or attempt to divert or take away, the business or patronage of any actual or prospective clients, customers, or accounts of Agenus, or (ii) recruit, solicit, or hire any employee of Agenus, or induce or attempt to induce any employee of Agenus, to discontinue his relationship with Agenus.
- 1.3 Third Party Obligations. Consultant represents and warrants to Agenus that none of his current obligations conflict with this Agreement or the Services to be provided hereunder. Consultant covenants not to enter into any such conflicting agreement or incur any such conflicting obligation without the prior written consent of Agenus. Consultant further covenants that the performance of the Services will not breach any agreement or obligation with any third
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party, including without limitation any obligation to refrain from engaging in activities that may compete with such party.

- 1.4 No Disparagement. Consultant agrees that during the Term and thereafter, Consultant shall not disparage Agenus or any of its Affiliates, or their respective directors, officers, employees, consultants, or agents, or otherwise make any statement or take any actions that would be materially harmful to the business, interests or reputation of Agenus or any of its Affiliates, or their respective directors, officers, employees, consultants, or agents.
2. Compensation.
- 2.1 Compensation. In exchange for the timely completion of Services during the Term, Agenus shall pay Consultant a retainer of \$10,000 per month. All payments shall be made to Consultant within thirty (30) days after the last day of each calendar month during the Term without the need for an invoice. The total Fees during the Term shall not exceed \$120,000 without amendment to this Agreement. All compensation and expense reimbursements to be paid under this Agreement shall be paid to Consultant in U.S. Dollars. Consultant acknowledges and agrees that payments made hereunder are for Services performed by Consultant. No payments shall be passed through to third parties on behalf of Agenus without a valid invoice or other written documentation between the Parties evidencing such payment arrangement.
- 2.2 Reimbursement of Expenses. Agenus shall reimburse Consultant for reasonable travel and other out-of-pocket expenses incurred by Consultant in performance of the Services and in accordance with Agenus's Travel & Expense Policy and Procedures, as may be amended from time to time by Agenus, provided that Consultant shall have submitted to Agenus written expense statements and other supporting documentation in a form that is reasonably satisfactory to Agenus. Agenus shall provide Consultant with a check for any amounts due under this Section
- 2.2 within forty-five (45) days after Agenus receives satisfactory documentation.
- 2.3 Independent Contractor. Consultant is an independent contractor of Agenus. Consultant acknowledges and agrees that Agenus will not provide Consultant with any employment benefits. Consultant is also responsible for the payment and the withholding of all applicable taxes, levies and/or duties applicable to all compensation and/or reimbursements paid to Consultant hereunder in accordance with all applicable laws, rules and regulations.
- 2.4 No Additional Obligation/Fair Market Value. Consultant acknowledges and agrees that the compensation payable hereunder represents Agenus's full and complete obligation for any and all Services to be rendered by Consultant under this Agreement. Consultant further represents to Agenus that the compensation paid hereunder represents fair market value for Consultant's time and the Services hereunder and is consistent with fees paid to Consultant for similar time and services provided by Consultant to others. Both Parties acknowledge that the compensation is not determined in a manner that takes into account the volume or value of any future business that might be generated between the Parties. In addition,
- Consultant and Agenus acknowledge that nothing in this Agreement shall be construed to require Consultant to promote, purchase, prescribe, or otherwise recommend any Agenus products being marketed or under development.
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3. Term and Termination.

- 3.1 Term. This Agreement shall commence on the Effective Date and shall remain in effect for a period of one (1) year, unless extended by mutual written agreement of the Parties, or earlier terminated in accordance with the provisions of this Article 3.
- 3.2 Termination for Convenience. Either Party may terminate this Agreement with or without cause upon seven (7) days prior written notice to the other Party with no further obligation, other than payment of compensation in accordance with Article 2 for Services rendered in accordance with this Agreement prior to the date of such termination notice.
- 3.3 Immediate Termination by Agenus. In addition, Agenus may terminate this Agreement immediately upon written notice to Consultant (or his legal representative) in the event (i) of the death or legal incapacity of Consultant or (ii) that Consultant is otherwise no longer able to perform the Services or (iii) if Consultant breaches or threatens to breach any provision of Sections 1.2, 1.3, 1.4, 7.3 or Articles 4, 5 or 6.
- 3.4 Survival. The following provisions shall survive the expiration or termination of this Agreement: Articles 4, 5 and 6; Sections 1.2, 1.4, 7.3 through 7.10, and this Section 3.4.

4. Confidential Information.

- 4.1 Definition of Confidential Information. Confidential Information shall mean any technical or business information furnished by or on behalf of Agenus to Consultant in connection with this Agreement or developed by Consultant in the course of performing the Services, regardless of whether such Confidential Information is in oral, electronic or written form. Such Confidential Information may include, without limitation, trade secrets, know-how, inventions, technical data or specifications, testing methods, business or financial information, research and development activities, product and marketing plans, and customer and supplier information.
- 4.2 Obligations. Consultant shall
- (a) maintain all Confidential Information in strict confidence; and
 - (b) use all Confidential Information solely for the purpose of providing the Services as requested by Agenus; and
 - (c) reproduce the Confidential Information only to the extent necessary for providing the Services as requested by Agenus, with all such reproductions being considered Confidential Information;
 - (d) disclose the Confidential Information only as expressly permitted in order to perform the Services; and
 - (e) not disclose or publish any Confidential Information to any third party without the express prior written consent of Agenus, in each case in Agenus's sole discretion.
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4.3 Exceptions. The obligations of Consultant under Section 4.2 shall not apply to the extent that Consultant can demonstrate that certain information:

- (a) was in the public domain prior to the time of its disclosure or development under this Agreement;
- (b) entered the public domain after the time of its disclosure or development under this Agreement other than due to an act or omission by Consultant;
- (c) was independently developed by Consultant prior to the time of its disclosure or development under this Agreement and without access to Confidential Information; or
- (d) is or was disclosed to Consultant at any time prior to its disclosure or development under this Agreement, without restriction, by a third party having no fiduciary relationship with Agenus and having no obligation of confidentiality with respect to such Confidential Information.

4.4 Required Disclosures. In addition Consultant may disclose Confidential Information to the extent necessary to comply with applicable laws or regulations, or with a court or administrative order, provided that Consultant (i) gives Agenus prompt written notice of such requirement, (ii) takes all reasonable and lawful actions to obtain confidential treatment for such disclosure and, if possible, to minimize the extent of such disclosure, and (iii) discloses only the Confidential Information strictly required to comply with such legal obligation.

4.5 Return of Confidential Information; Survival of Obligations. Upon the termination of this Agreement, or earlier at the request of Agenus, Consultant shall return to Agenus all originals, copies, and summaries of documents, materials, and other tangible manifestations of Confidential Information in the possession or control of Consultant. The obligations set forth in this Article 4 shall remain in effect for a period of five (5) years after termination of this Agreement, except that the obligations of Consultant to return Confidential Information shall survive until fulfilled. Consultant acknowledges and agrees that the Confidential Information is of extreme value to Agenus, and any use or disclosure thereof other than as expressly allowed under this Agreement would cause irreparable harm to Agenus for which Agenus could obtain relief as contemplated in Section 7.9 of this Agreement, and that such unauthorized disclosure may represent Consultant's violation of U.S. securities laws.

5. Developments; Third Party IP; Avoidance of Claims.

5.1 Developments. "Developments" shall mean any and all inventions, developments, data, discoveries, improvements, ideas, or concepts, and related documentation, and any other works of invention or authorship (whether or not patentable or copyrightable) which Consultant has conceived, discovered, developed, or reduced to practice or tangible medium in the course of providing the Services, or which arise from access to and/or use of Confidential Information, and any and all intellectual property rights in any of the foregoing. Consultant shall promptly disclose to Agenus any and all Developments. Consultant acknowledges and agrees that all Confidential Information and Developments is and shall remain the exclusive property of Agenus or the third party entrusting any Confidential Information to

Agenus. Consultant shall and hereby assigns, conveys, and grants to Agenus, all of his right, title, and interest in and to any and all Developments.

- 5.4 Third-Party Intellectual Property. Consultant acknowledges that Agenus does not desire to acquire any trade secrets, know-how, confidential information, or other intellectual property that Consultant may have acquired from or developed for any third party ("Third-Party IP"). Consultant agrees that in the course of providing the Services, Consultant shall not improperly use or disclose any Third-Party IP.
- 5.5 Avoidance of Claims by Third-Parties. Unless covered by an appropriate agreement between any third party and Agenus, Consultant shall not engage in any activities or use any facilities, funds or equipment, in the course of providing Services, which could result in claims of ownership to any Developments by such third party.
6. U.S. Foreign Corrupt Practices Act Compliance.
- 6.1 FCPA. Consultant understands that Agenus is an issuer of securities in the United States and is subject to the provisions of the U. S. Foreign Corrupt Practices Act, 15 U.S.C. §§ 78m, 78dd-1 through 78dd-3 ("FCPA"). This law prohibits making, promising or offering to make corrupt payments to foreign officials, political parties or candidates, or making payments to other persons who will offer or make payments to any of the aforementioned parties in order to obtain business, retain business or gain an improper advantage. Consultant represents and warrants to Agenus that Consultant is familiar with and understands the FCPA.
- 6.2 Representations. Consultant represents and warrants to Agenus that throughout the period in which Consultant provides Services to Agenus, neither Consultant, nor any person performing Services on behalf of Consultant will engage in any activity that could cause a violation of any provision of the FCPA by Agenus. Consultant represents and warrants that Consultant has not made, promised to make, or arranged for any third party to make any payments or gifts to foreign officials in connection with Consultant's engagement by Agenus. Further, Consultant represents and warrants to Agenus that Consultant has not violated any anti-corruption law and further that Consultant is not involved in, or the subject of, any investigation involving bribery, corruption or improper payments to foreign government officials, as defined in the FCPA. Consultant agrees to update these representations and warranties on a periodic basis as required by Agenus in a format prescribed by Agenus.
- 6.3 Notice of Violation. Consultant agrees to notify Agenus immediately in writing if Consultant or any person who is performing Services hereunder on behalf of Consultant is suspected of violating any anti-corruption law or becomes involved in, or a subject of, an investigation or law enforcement inquiry into possible improper payments to foreign officials or possible violations of anti-corruption laws. Consultant further agrees to provide such notification if Consultant or any person performing Services hereunder on behalf of Consultant becomes involved in any action, suit, claim, investigation or proceeding that is pending, or to the
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knowledge of Consultant threatened, relating to a potential violation of any anti-corruption laws, including the FCPA.

- 6.4 Audits. Consultant agrees to grant Agenus the right to audit Consultant's books and records regarding the receipt and disposition of any payments made to Consultant by Agenus, and Consultant further agrees to cooperate with Agenus in connection with such audits.
- 6.5 Material Provision. It is agreed between Consultant and Agenus that this Article 6 is deemed by the Parties to be a material provision of this Agreement.
- 6.6 Consultant has received a copy of Agenus's Code of Conduct and FCPA Compliance Memorandum (each a "Policy"). Consultant represents and warrants that Consultant has had the opportunity to review the Policy, understands the Policy, and will comply with it.
7. Miscellaneous.
- 7.1 Counterparts. This Agreement may be executed in counterparts, which, when taken together, shall constitute one agreement. If 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.
- 7.2 Assignment. This Agreement may not be assigned by either Party without the prior written consent of the other Party, except that Agenus may assign this Agreement to an affiliate or in connection with the merger, consolidation, or sale of all or substantially all of its business or assets relating to this Agreement. This Agreement shall inure to the benefit of and be binding upon the Parties and their respective lawful successors, assigns, heirs, and personal representatives.
- 7.3 Insider Trading. Consultant acknowledges that Consultant may receive material, non-public information about Agenus and its business in the course of providing the Services, that this information must be maintained in strict confidence, and that the U.S. securities laws restrict trading on the basis of such information or providing such information to third parties who may trade on such information.
- 7.4 Publicity. Consultant consents to use by Agenus of Consultant's name and likeness in written materials or oral presentations to current or prospective customers, investors or others, provided that such materials or presentations accurately describe the nature of Consultant's relationship with or contribution to Agenus.
- 7.5 Notices. Any notice or other communication required or permitted hereunder shall be in writing and shall be deemed given (a) when delivered personally, (b) upon confirmation of delivery by email if sent during normal business hours, and otherwise on the next business day, (c) on the next business day after timely delivery to an overnight courier (postage prepaid), or (d) on the third business day after deposit in the United States mail (certified or registered mail return receipt requested, postage prepaid), to the addresses of the Parties set forth in the first paragraph of this Agreement, and in the case of correspondence to
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Agenus, with a copy to “Legal Department” at the same address. Either Party may change its designated address by notice to the other Party in the manner provided in this Section 7.5.

- 7.6 Entire Agreement; Amendment. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and supersedes any and all prior or contemporaneous oral and prior written agreements and understandings. This Agreement may be modified, amended, or supplemented only by means of a written instrument signed by both Parties. Any waiver of any rights or failure to act in a specific instance shall relate only to such instance and shall not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar.
- 7.7 Governing Law. This Agreement has been drafted in the English Language and the English language shall govern its interpretation. This Agreement shall be governed by and construed in accordance with the laws of the State of New York irrespective of any conflict of laws principles.
- 7.8 Severability. In the event that any provision of this Agreement shall, for any reason, be held to be invalid or unenforceable in any respect, such invalidity or unenforceability shall not affect any other provision hereof, and this Agreement shall be construed as if such invalid or unenforceable provision had not been included herein. If any provision hereof shall, for any reason, be held by a court to be excessively broad as to duration, geographical scope, activity, or subject matter, it shall be construed by limiting and reducing it to make it enforceable to the extent compatible with applicable law as then in effect. To the extent this Agreement may be construed in accordance with the laws of any state that limits the assignability to Agenus of certain Developments, the provisions of this Agreement shall be modified to conform to such state limitation while most closely effectuating the original intention of the Parties (e.g., by providing for fully paid up license rights, or the like).
- 7.9 Equitable Relief. Consultant acknowledges that the restrictions contained in this Agreement are necessary for the protection of the business and goodwill of Agenus and are reasonable for such purpose. Consultant agrees that any breach or threatened breach of his obligations under this Agreement will cause irreparable harm to Agenus. Therefore, in addition to any other remedies that may be available to Agenus, Agenus may apply for and obtain immediate injunctive relief in any court of competent jurisdiction to restrain the breach or threatened breach of, or otherwise to specifically enforce, any obligations of Consultant under this Agreement.
- 7.10 Massachusetts Information Security Regulations Compliance. Massachusetts Information Security Regulations, 201 Code of Mass. Regs. 17.00 et seq. (the “IS Regulations”) mandate procedures to safeguard the “Personal Information,” as defined in the IS Regulations, of Massachusetts residents. Because Consultant may have access to the Personal Information of Agenus’s employees, contractors, business associates, or customers who are Massachusetts residents (“Protected Information”), the IS Regulations require Consultant to certify compliance with the IS Regulations. Accordingly, Consultant agrees that, as long as Consultant has access to or maintains copies of Protected Information Consultant will: (a) comply with the IS Regulations with respect to the Protected Information, (b) promptly notify Agenus of any suspected or actual
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data breach involving Protected Information, and (c) cooperate with Agenus to investigate and remediate any suspected or actual data breach involving Protected Information.

- 7.11 Whistleblower Notice. Pursuant to 18 USC § 1833(b), an individual may not be held criminally or civilly liable under any federal or state trade secret law for disclosure of a trade secret: (i) made in confidence to a government official, either directly or indirectly, or to an attorney, solely for the purpose of reporting or investigating a suspected violation of law; and/or
- (ii) in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Accordingly, the Parties to this Agreement have the right to disclose in confidence trade secrets to Federal, State, and local government officials, or to an attorney, for the sole purpose of reporting or investigating a suspected violation of law. The Parties also have the right to disclose trade secrets in a document filed in a lawsuit or other proceeding, but only if the filing is made under seal and protected from public disclosure.

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IN WITNESS WHEREOF, the Parties each have caused this Agreement to be executed by their duly authorized representative as of the Effective Date.

AGENUS INC.

CONSULTANT

/s/ Garo H. Armen

/s/ Brian Corvese

Name: Garo H. Armen

Brian Corvese

Title: Chairman and CEO

Certification Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended

I, Garo H. Armen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Agenus 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 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 U.S. 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 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 function):
 - 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.

Date: May 11, 2020

/s/ GARO H. ARMEN, PH.D.

Garo H. Armen, Ph.D.

Chief Executive Officer and Principal Executive Officer

Certification Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended

I, Christine M. Klaskin, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Agenus 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 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 U.S. 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 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 function):
 - 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.

Date: May 11, 2020

/s/ CHRISTINE M. KLASKIN

Christine M. Klaskin
VP, Finance and Principal Financial Officer

Certification
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 on Form 10-Q of Agenus Inc. (the "Company") for the quarterly period ended March 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned to his/her knowledge hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

- (i) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (ii) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ GARO H. ARMEN, PH.D.

Garo H. Armen, Ph.D.

Chief Executive Officer and Principal Executive Officer

/s/ CHRISTINE M. KLASKIN

Christine M. Klaskin

VP, Finance and Principal Financial Officer

Date: May 11, 2020

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished to the Securities and Exchange Commission as an exhibit to the Report and should not be considered filed as part of the Report.