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 September 30, 2020

OR

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

For the transition period from_____ to _____

Commission file number 001-36548

ATARA BIOTHERAPEUTICS, INC.
(Exact name of Registrant as specified in its Charter)

Delaware	**46-0920988**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
611 Gateway Blvd., Suite 900 South San Francisco, CA	**94080**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (650) 278-8930

Securities 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 $0.0001 per share	**ATRA**	**The Nasdaq Stock Market LLC**

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

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

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

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

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

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

The number of outstanding shares of the Registrant's Common Stock as of October 30, 2020 was77,714,302 shares.

ATARA BIOTHERAPEUTICS, INC.

INDEX

ATARA BIOTHERAPEUTICS, INC.
Condensed Consolidated Balance Sheets
(Unaudited)
(In thousands, except per share amounts)

	September 30, 2020	December 31, 2019
Assets		
Current assets:		
Cash and cash equivalents	$ 62,620	$ 74,317
Short-term investments	264,565	184,792
Restricted cash - short-term	194	194
Prepaid expenses and other current assets	12,053	13,689
Total current assets	339,432	272,992
Property and equipment, net	51,954	54,176
Operating lease assets	12,069	14,007
Restricted cash - long-term	1,200	1,200
Other assets	877	567
Total assets	$ 405,532	$ 342,942
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 5,190	$ 7,963
Accrued compensation	16,710	14,706
Accrued research and development expenses	8,883	8,341
Other current liabilities	5,272	5,733
Total current liabilities	36,055	36,743
Operating lease liabilities - long-term	13,129	14,136
Other long-term liabilities	2,413	1,282
Total liabilities	51,597	52,161
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Common stock—$0.0001 par value, 500,000 shares authorized as of September 30, 2020 and December 31, 2019; 77,220 and 56,806 shares issued and outstanding as of September 30, 2020 and December 31, 2019, respectively	8	6
Additional paid-in capital	1,396,674	1,108,516
Accumulated other comprehensive income	527	220
Accumulated deficit	(1,043,274)	(817,961)
Total stockholders' equity	353,935	290,781
Total liabilities and stockholders' equity	$ 405,532	$ 342,942

See accompanying notes.

ATARA BIOTHERAPEUTICS, INC.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)
(In thousands, except per share amounts)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Operating expenses:				
Research and development	$ 59,877	$ 53,538	$ 179,096	$ 154,457
General and administrative	14,829	19,018	48,259	61,525
Total operating expenses	74,706	72,556	227,355	215,982
Loss from operations	(74,706)	(72,556)	(227,355)	(215,982)
Interest and other income, net	364	661	2,049	3,502
Loss before provision for income taxes	(74,342)	(71,895)	(225,306)	(212,480)
Provision for income taxes	6	—	7	—
Net loss	$ (74,348)	$ (71,895)	$ (225,313)	$ (212,480)
Other comprehensive gain:				
Unrealized (loss) gain on available-for-sale securities	(283)	60	307	573
Comprehensive loss	$ (74,631)	$ (71,835)	$ (225,006)	$ (211,907)
Net loss per common share:				
Basic and diluted net loss per common share	$ (0.92)	$ (1.31)	$ (3.21)	$ (4.32)
Weighted-average shares outstanding used to calculate basic and diluted net loss per common share	81,176	54,920	70,170	49,176

See accompanying notes.

ATARA BIOTHERAPEUTICS, INC.
Condensed Consolidated Statements of Changes in Stockholders' Equity
(Unaudited)
(In thousands)

For the Nine Months Ended September 30, 2020	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
Balance as of December 31, 2019	56,806	$ 6	$ 1,108,516	$ 220	$ (817,961)	$ 290,781
Issuance of common stock through ATM facilities, net of commissions and offering costs of $704	1,528	—	22,987	—	—	22,987
Exercise of pre-funded warrants	57	—	—	—	—	—
RSU settlements, net of shares withheld	455	—	(1,395)	—	—	(1,395)
Issuance of common stock pursuant to employee stock awards	94	—	1,330	—	—	1,330
Stock-based compensation expense	—	—	12,644	—	—	12,644
Net loss	—	—	—	—	(73,509)	(73,509)
Unrealized loss on available-for-sale securities	—	—	—	(16)	—	(16)
Balance as of March 31, 2020	58,940	6	1,144,082	204	(891,470)	252,822
Issuance of common stock and pre-funded warrants through underwritten offering, net of offering costs of $70	14,958	1	189,300	—	—	189,301
RSU settlements, net of shares withheld	219	—	—	—	—	—
Issuance of common stock pursuant to employee stock awards	191	—	1,904	—	—	1,904
Stock-based compensation expense	—	—	13,948	—	—	13,948
Net loss	—	—	—	—	(77,456)	(77,456)
Unrealized gain on available-for-sale securities	—	—	—	606	—	606
Balance as of June 30, 2020	74,308	7	1,349,234	810	(968,926)	381,125
Issuance of common stock through ATM facilities, net of commissions and offering costs of $878	2,582	1	34,126	—	—	34,127
RSU settlements, net of shares withheld	316	—	(126)	—	—	(126)
Issuance of common stock pursuant to employee stock awards	14	—	185	—	—	185
Stock-based compensation expense	—	—	13,255	—	—	13,255
Net loss	—	—	—	—	(74,348)	(74,348)
Unrealized loss on available-for-sale securities	—	—	—	(283)	—	(283)
Balance as of September 30, 2020	77,220	$ 8	$ 1,396,674	$ 527	$ (1,043,274)	$ 353,935

For the Nine Months Ended September 30, 2019	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive (Loss) Income	Accumulated Deficit	Total Stockholders' Equity
Balance as of December 31, 2018	45,951	$ 5	$ 866,541	$ (340)	$ (527,349)	$ 338,857
Effect of the adoption of ASC topic 842 (Leases)	—	—	—	—	364	364
Balance as of January 1, 2019	45,951	$ 5	$ 866,541	$ (340)	$ (526,985)	$ 339,221
RSU settlements, net of shares withheld	197	—	(4,575)	—	—	(4,575)
Issuance of common stock pursuant to employee stock awards	159	—	2,898	—	—	2,898
Stock-based compensation expense	—	—	12,269	—	—	12,269
Net loss	—	—	—	—	(66,257)	(66,257)
Unrealized gain on available-for-sale securities	—	—	—	378	—	378
Balance as of March 31, 2019	46,307	5	877,133	38	(593,242)	283,934
Issuance of common stock through ATM facilities, net of commissions and offering costs of $338	359	—	7,630	—	—	7,630
RSU settlements, net of shares withheld	120	—	(2,095)	—	—	(2,095)
Issuance of common stock pursuant to employee stock awards	97	—	1,802	—	—	1,802
Stock-based compensation expense	—	—	15,201	—	—	15,201
Net loss	—	—	—	—	(74,328)	(74,328)
Unrealized gain on available-for-sale securities	—	—	—	135	—	135
Balance as of June 30, 2019	46,883	5	899,671	173	(667,570)	232,279
Issuance of common stock and pre-funded warrants through underwritten offering, net of offering costs of $288	6,872	—	140,711	—	—	140,711
Issuance of common stock through ATM facilities, net of commissions and offering costs of $155	327	—	5,000	—	—	5,000
RSU settlements, net of shares withheld	32	—	(25)	—	—	(25)
Issuance of common stock pursuant to employee stock awards	11	—	160	—	—	160
Stock-based compensation expense	—	—	12,152	—	—	12,152
Net loss	—	—	—	—	(71,895)	(71,895)
Unrealized gain on available-for-sale securities	—	—	—	60	—	60
Balance as of September 30, 2019	54,125	$ 5	$ 1,057,669	$ 233	$ (739,465)	$ 318,442

See accompanying notes.

ATARA BIOTHERAPEUTICS, INC.
Condensed Consolidated Statements of Cash Flows
(Unaudited)
(In thousands)

	Nine Months Ended September 30,	
	2020	**2019**
Operating activities		
Net loss	$ (225,313)	$ (212,480)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	39,847	39,622
Depreciation and amortization expense	6,175	5,174
Amortization (accretion) of investment premiums (discounts)	458	(1,177)
Non-cash operating lease expense	1,100	768
Loss on disposals of property and equipment	93	927
Asset retirement obligation accretion expense	58	53
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	717	1,204
Operating lease assets	886	238
Other assets	(209)	308
Accounts payable	(2,718)	1,527
Accrued compensation	2,004	2,261
Accrued research and development expenses	542	(13,038)
Other current liabilities	(459)	(1,836)
Operating lease liabilities	(924)	(487)
Other long-term liabilities	1,104	—
Net cash used in operating activities	(176,639)	(176,936)
Investing activities		
Purchases of short-term investments	(279,192)	(147,187)
Proceeds from maturities and sales of short-term investments	199,268	209,379
Purchases of property and equipment	(3,912)	(3,021)
Proceeds from sale of property and equipment	—	161
Net cash (used in) provided by investing activities	(83,836)	59,332
Financing activities		
Proceeds from sale of common stock in underwritten offerings, net	189,301	140,888
Proceeds from issuance of common stock through ATM facilities, net	58,045	12,630
Proceeds from employee stock awards	3,407	4,859
Taxes paid related to net share settlement of restricted stock units	(1,521)	(6,695)
Principal payments on finance lease obligations	(289)	(345)
Other financing activities, net	(165)	—
Net cash provided by financing activities	248,778	151,337
(Decrease) increase in cash, cash equivalents and restricted cash	(11,697)	33,733
Cash, cash equivalents and restricted cash at beginning of period	75,711	62,092
Cash, cash equivalents and restricted cash at end of period	$ 64,014	$ 95,825
Non-cash investing and financing activities		
Property and equipment purchases included in accounts payable and other accrued liabilities	$ 230	$ 699
Finance lease assets obtained in exchange for lease obligations	$ 281	$ —
Proceeds from issuance of common stock through ATM facilities not yet received	$ 254	$ —
Receivable for options exercised	$ 12	$ —
Supplemental cash flow disclosure		
Cash paid for interest	$ 50	$ 43
Cash paid for income taxes	$ 7	$ —

See accompanying notes.

1. Description of Business

Atara Biotherapeutics, Inc. ("Atara", "we", "our" or "the Company") was incorporated in August 2012 in Delaware. Atara is a pioneer in T-cell immunotherapy, leveraging its novel allogeneic EBV T-cell platform to develop transformative therapies for patients with serious diseases, including solid tumors, hematologiccancers and autoimmune disease.

We have several T-cell immunotherapies in clinical development and are progressing multiple next-generation allogeneic chimeric antigen receptor T-cell ("CAR T") programs.

We have licensed rights to T-cell product candidates from Memorial Sloan Kettering Cancer Center ("MSK"), rights related to our next-generation CAR T programs from MSK and from Moffitt Cancer Center, and rights to know-how and technology from the Council of the Queensland Institute of Medical Research ("QIMR Berghofer"). See Note 6 for further information.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements include the accounts of Atara and its wholly-owned subsidiaries and have been prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") and the requirements of the Securities and Exchange Commission ("SEC") for interim reporting. As permitted under those rules, certain footnotes or other financial information that are normally required by U.S. GAAP can be condensed or omitted. These condensed consolidated financial statements have been prepared on the same basis as the Company's annual consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019, except for the adoption of accounting pronouncements relating to credit losses on financial instruments, implementation of cloud computing arrangements, and simplification of income tax accounting, effective January 1, 2020, as discussed below. In the opinion of management, the condensed consolidated financial statements reflect all adjustments, consisting only of normal recurring adjustments, which are necessary for a fair presentation of the Company's consolidated financial statements. The results of operations for any interim period are not necessarily indicative of the results to be expected for the full year or any other future period. The condensed consolidated balance sheet as of December 31, 2019 has been derived from audited consolidated financial statements at that date but does not include all of the information required by U.S. GAAP for complete consolidated financial statements.

Liquidity

We have incurred significant operating losses since inception and have relied on public and private equity financings to fund our operations. As of September 30, 2020, we had an accumulated deficit of $1,043.3 million. As we continue to incur losses, our transition to profitability will depend on the successful development, approval and commercialization of product candidates and on the achievement of sufficient revenues to support our cost structure. We may never achieve profitability, and unless and until we do, we will need to continue to raise additional capital. We expect that our cash, cash equivalents and short-term investments as of September 30, 2020 will be sufficient to fund our planned operations into 2022.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates, assumptions, and judgments that affect the amounts reported in the financial statements and accompanying notes. Significant estimates relied upon in preparing these financial statements include estimates related to clinical trial and other accruals, stock-based compensation expense and income taxes. Actual results could differ materially from those estimates.

Recent Accounting Pronouncements

The Company considers the applicability and impact of any Accounting Standards Update ("ASU") issued by the Financial Accounting Standards Board ("FASB"). Other than the ASUs we adopted effective January 1, 2020 and listed below, all other ASUs were assessed and determined to be either not applicable or are expected to have minimal impact on our consolidated financial statements.

Adoption of New Accounting Pronouncements

We adopted ASU No. 2016-13 (as amended by ASUs 2018-19, 2019-04, 2019-05 and 2019-11), *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, prospectively on January 1, 2020. Under this new guidance, a company is required to estimate credit losses on certain types of financial instruments using an expected-loss model, replacing the current incurred-loss model, and record the estimate through an allowance for credit losses. We do not hold material amounts of the types of financial instruments impacted by this guidance on our balance sheet. The guidance also establishes a new impairment model for available-for-sale debt securities. The adoption did not have a material impact on our condensed consolidated balance sheet or our condensed consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for the three and nine months ended September 30, 2020 and 2019.

We adopted ASU No. 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, effective January 1, 2020, electing a prospective adoption method. The new standard requires that certain implementation costs for cloud computing arrangements are capitalized and amortized over the term of associated hosted cloud computing arrangement service. Capitalized implementation costs are classified in prepaid expenses and other assets. The amortization of the capitalized asset is presented in the same line on the statement of operations and comprehensive loss as the fees for the associated hosted cloud computing arrangement service and not included with depreciation or amortization expense related to property and equipment or intangible assets. Cash flows related to capitalized implementation costs are presented in cash flows used in operating activities. The adoption did not have a material impact on our condensed consolidated balance sheet or our condensed consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for the three and nine months ended September 30, 2020 and 2019.

We adopted ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, as of January 1, 2020, which eliminates certain exceptions related to the general principles in ASC 740 and makes amendments to other areas with the intention of simplifying various aspects related to accounting for income taxes. The provisions of the ASU that are applicable to Atara are applied on a prospective basis. The adoption did not have a material impact on our condensed consolidated balance sheet or our condensed consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for the three and nine months ended September 30, 2020 and 2019.

3. Net Loss per Common Share

Basic net loss per common share is calculated by dividing net loss by the weighted-average number of shares of common stock and pre-funded warrants outstanding during the period, without consideration of common share equivalents. Diluted net loss per common share is computed by dividing net loss by the weighted-average number of shares of common stock, pre-funded warrants and common share equivalents outstanding for the period. The pre-funded warrants are included in the computation of basic and diluted net loss per common share as the exercise price is negligible and the pre-funded warrants are fully vested and exercisable. Common share equivalents are only included in the calculation of diluted net loss per common share when their effect is dilutive.

Potential dilutive securities, which include unvested restricted stock units ("RSUs"), unvested performance-based RSUs for which established performance criteria have been achieved as of the end of the respective periods, vested and unvested options to purchase common stock and shares to be issued under our employee stock purchase plan ("ESPP"), have been excluded from the computation of diluted net loss per share as the effect is antidilutive. Therefore, the denominator used to calculate both basic and diluted net loss per common share is the same in all periods presented.

The following table represents the potential common shares issuable pursuant to outstanding securities as of the related period end dates that were excluded from the computation of diluted net loss per common share, as their inclusion would have an antidilutive effect:

	As of September 30,	
	2020	2019
Unvested RSUs	3,003,142	2,001,218
Vested and unvested options	8,205,062	7,364,588
ESPP share purchase rights	107,970	75,893
Total	11,316,174	9,441,699

4. Financial Instruments

Our financial assets are measured at fair valueon a recurring basis using the following hierarchy to prioritize valuation inputs, in accordance with applicable U.S. GAAP:

Level 1:Quoted prices in active markets for identical assets or liabilities that we have the ability to access

Level 2:Observable market-based inputs or unobservable inputs that are corroborated by market data such as quoted prices, interest rates and yield curves

Level 3:Inputs that are unobservable data points that are not corroborated by market data

We review the fair value hierarchy classification on a quarterly basis. Changes in the ability to observe valuation inputs may result in a reclassification of levels of certain securities within the fair value hierarchy. We recognize transfers into and out of levels within the fair value hierarchy in the period in which the actual event or change in circumstances that caused the transfer occurs. There have been no transfers between Level 1, Level 2 and Level 3 in any periods presented.

Financial assets and liabilities are considered Level 2 when their fair values are determined using inputs that are observable in the market or can be derived principally from or corroborated by observable market data such as pricing for similar securities, recently executed transactions, cash flow models with yield curves, and benchmark securities. In addition, Level 2 financial instruments are valued using comparisons to like-kind financial instruments and models that use readily observable market data as their basis. U.S. Treasury, government agency and corporate debt obligations, commercial paper and asset-backed securities are valued primarily using market prices of comparable securities, bid/ask quotes, interest rate yields and prepayment spreads and are included in Level 2.

Financial assets and liabilities are considered Level 3 when their fair values are determined using pricing models, discounted cash flow methodologies, or similar techniques, and at least one significant model assumption or input is unobservable. We have no Level 3 financial assets or liabilities.

The following tables summarize the estimated fair value and related valuation input hierarchy of our available-for-sale securities as of each period end:

As of September 30, 2020:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 55,707	$ —	$ —	$ 55,707
U.S. Treasury obligations	Level 2	157,435	151	—	157,586
Government agency obligations	Level 2	24,816	13	(5)	24,824
Corporate debt obligations	Level 2	69,768	361	(2)	70,127
Commercial paper	Level 2	9,994	—	—	9,994
Asset-backed securities	Level 2	8,601	10	(1)	8,610
Total available-for-sale securities		326,321	535	(8)	326,848
Less: amounts classified as cash equivalents		(62,283)	—	—	(62,283)
Amounts classified as short-term investments		$ 264,038	$ 535	$ (8)	$ 264,565

As of December 31, 2019:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 63,554	$ —	$ —	$ 63,554
U.S. Treasury obligations	Level 2	52,805	46	(1)	52,850
Government agency obligations	Level 2	6,151	1	(1)	6,151
Corporate debt obligations	Level 2	100,512	180	(10)	100,682
Commercial paper	Level 2	26,290	—	—	26,290
Asset-backed securities	Level 2	7,266	6		7,272
Certificates of deposit	Level 2	500	—	—	500
Total available-for-sale securities		257,078	233	(12)	257,299
Less: amounts classified as cash equivalents		(72,507)	—	—	(72,507)
Amounts classified as short-term investments		$ 184,571	$ 233	$ (12)	$ 184,792

The amortized cost and fair value of our available-for-sale securities by contractual maturity were as follows:

	As of September 30, 2020		As of December 31, 2019	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
	(in thousands)		(in thousands)	
Maturing within one year	$ 281,771	$ 282,099	$ 214,085	$ 214,199
Maturing in one to five years	44,550	44,749	42,993	43,100
Total available-for-sale securities	$ 326,321	$ 326,848	$ 257,078	$ 257,299

As of September 30, 2020, no significant facts or circumstances were present to indicate a deterioration in the creditworthiness of the issuers of the available-for-sale securities we hold, and the Company has no requirement or intention to sell these securities before maturity or recovery of their amortized cost basis. We considered the current and expected future economic and market conditions surrounding the COVID-19 pandemic and determined that our investments were not significantly impacted. For all securities with a fair value less than its amortized cost basis, we determined the decline in fair value below amortized cost basis to be immaterial and non-credit related, and therefore no allowance for losses has been recorded. During the three and nine months ended September 30, 2020 and 2019, we did not recognize any impairment losses on our investments.

We have elected the practical expedient to exclude the applicable accrued interest from both the fair value and the amortized cost basis of our available-for-sale securities for purposes of identifying and measuring an impairment. We present accrued interest receivable related to our available-for-sale securities in prepaid expenses and other current assets, separate from short-term investments on our condensed consolidated balance sheet. As of September 30, 2020 and December 31, 2019, accrued interest receivable was $0.8 million and $0.9 million, respectively. Our accounting policy is to not measure an allowance for credit losses for accrued interest receivables and to write-off any uncollectible accrued interest receivable as a reversal of interest income in a timely manner, which we consider to be in the period in which we determine the accrued interest will not be collected by us. We have not written off any accrued interest receivables for the three and nine months ended September 30, 2020 and 2019.

In addition, restricted cash collateralized by money market funds is a financial asset measured at fair value and is a Level 1 financial instrument under the fair value hierarchy. As of September 30, 2020 and December 31, 2019, restricted cash was $1.4 million.

The following table provides a reconciliation of cash, cash equivalents and restricted cash within the condensed consolidated balance sheets that sum to the total of the same such amounts in the condensed consolidated statement of cash flows:

	September 30, 2020	December 31, 2019
	(in thousands)	
Cash and cash equivalents	$ 62,620	$ 74,317
Restricted cash - short term	194	194
Restricted cash - long term	1,200	1,200
Total cash, cash equivalents and restricted cash	$ 64,014	$ 75,711

5. Property and Equipment

Property and equipment consisted of the following as of each period end:

	September 30, 2020	December 31, 2019
	(in thousands)	
Leasehold improvements	$ 50,038	$ 49,028
Lab equipment	7,862	6,815
Machinery and equipment	4,531	3,832
Computer equipment and software	4,071	3,299
Furniture and fixtures	2,052	1,764
Construction in progress	1,017	1,116
Property and equipment, gross	69,571	65,854
Less: accumulated depreciation and amortization	(17,617)	(11,678)
Property and equipment, net	$ 51,954	$ 54,176

Depreciation and amortization expense was $2.2 million and $1.8 million for the three months ended September 30, 2020 and 2019, respectively, and $6.2 million and $5.2 million for the nine months ended September 30, 2020 and 2019, respectively.

6. License and Collaboration Agreements

MSK Agreements – In June 2015, we entered into an exclusive license agreement with MSK for three clinical stage T-cell therapies. We are required to make additional payments of up to $33.0 million to MSK based on achievement of specified regulatory and sales-related milestones, as well as mid-single-digit percentage tiered royalty payments based on future sales of products resulting from the development of the licensed product candidates, if any. In addition, under certain circumstances, we are required to make certain minimum annual royalty payments to MSK, which are creditable against earned royalties owed for the same annual period. We are also required to pay a low double-digit percentage of any consideration we receive for sublicensing the licensed rights. The license agreement expires on a product-by-product and country-by-country basis on the later of: (i) expiration of the last licensed patent rights related to each licensed product, (ii) expiration of any market exclusivity period granted by law with respect to each licensed product, and (iii) a specified number of years after the first commercial sale of the licensed product in each country. Upon expiration of the license agreement, Atara will retain non-exclusive rights to the licensed products.

In May 2018 and December 2018, we licensed additional technology from MSK. In connection with the effectiveness of the December 2018 license agreement, we made upfront cash payments of $12.5 million in the first quarter of 2019, which were recorded as research and development expense in our consolidated statement of operations and comprehensive loss in the fourth quarter of 2018. We are obligated to make additional milestone payments based on achievement of specified development, regulatory and sales-related milestones, as well as mid-single-digit percentage tiered royalty payments based on future sales of products resulting from the development of the licensed product candidates, if any.

QIMR Berghofer Agreements – In October 2015, we entered into an exclusive license agreement and a research and development collaboration agreement with QIMR Berghofer. Under the terms of the license agreement, we obtained an exclusive, worldwide license to develop and commercialize allogeneic T-cell therapy programs utilizing technology and know-how developed by QIMR Berghofer. In September 2016, the exclusive license agreement and research and development collaboration agreement were amended and restated. Under the amended and restated agreements, we obtained an exclusive, worldwide license to develop and commercialize additional T-cell programs, as well as the option to license additional technology. We exercised this option in June 2018. We further amended and restated our license agreement and research and development collaboration agreements with QIMR Berghofer in August 2019 to terminate our license to certain rights related to cytomegalovirus. In addition, we further amended and restated our license agreement and research and development collaboration agreement with QIMR Berghofer in August 2020 to terminate our license to certain rights related to BK polyomavirus and JC polyomavirus. Our current license agreement also provides for various milestone and royalty payments to QIMR Berghofer based on future product sales, if any. Under the terms of our current research and development collaboration agreement, we are also required to reimburse the cost of agreed-upon development activities related to programs developed under the collaboration. These payments are expensed on a straight-line basis over the related development periods. The agreement also provides for various milestone payments to QIMR Berghofer based on achievement of certain developmental and regulatory milestones.

From time to time, we have entered into other license and collaboration agreements with other parties. For example, we licensed additional rights related to our MSK-partnered next-generation CAR T programs from MSK in May 2018 and we licensed rights related to our next-generation CAR T programs from Moffitt Cancer Center in August 2018, and we agreed to collaborate through sponsored research in connection with each of these licenses. We also licensed rights related to our MSK-partnered next-generation CAR T programs from the National Institutes of Health in December 2018.

Milestones and royalties under each of the above agreements are contingent upon future events and will be recorded as expense when it is probable that the milestones will be achieved or royalties are due. As of September 30, 2020 and December 31, 2019, there were no outstanding obligations for milestones and royalties under our license and collaboration agreements.

Cognate Agreement - In December 2019, we entered into a Commercial Manufacturing Services Agreement (the "Manufacturing Agreement") with Cognate BioServices, Inc. ("Cognate") to supersede the Development and Manufacturing Agreement that was entered into with Cognate in August 2015 and amended in December 2017, May 2018, November 2018, June 2019 and November 2019. Pursuant to the Manufacturing Agreement, Cognate provides manufacturing services for certain of our product candidates. The initial term of the Manufacturing Agreement is from January 1, 2020 until December 31, 2021 and is renewable with Cognate's approval for an additional one-year period. We may terminate the Manufacturing Agreement for convenience on six months' written notice to Cognate, or immediately if Cognate is unable to perform the services under the Manufacturing Agreement or fails to obtain or maintain certain necessary approvals.

7. Commitments and Contingencies

License and Collaboration Agreements

Potential payments related to our license and collaboration agreements, including milestone and royalty payments, are detailed in Note 6.

Other Research and Development Agreements

We may enter into contracts in the normal course of business with clinical research organizations for clinical trials, with contract manufacturing organizations for clinical supplies, and with other vendors for pre-clinical studies, supplies and other services for our operating purposes. These contracts generally provide for termination on notice. As of September 30, 2020 and December 31, 2019, there were no amounts accrued related to contract termination charges or minimum purchase volumes not being met.

Indemnification Agreements

In the normal course of business, we enter into contracts and agreements that contain a variety of representations and warranties and provide for indemnification for certain liabilities. The exposure under these agreements is unknown because it involves claims that may be made against us in the future but have not yet been made. To date, we have not paid any claims or been required to defend any action related to our indemnification obligations. However, we may record charges in the future as a result of these indemnification obligations. We also have indemnification obligations to our directors and executive officers for specified events or occurrences, subject to some limits, while they are serving at our request in such capacities. There have been no claims to date and we believe the fair value of these indemnification agreements is minimal. Accordingly, we did not record liabilities for these agreements as of September 30, 2020 and December 31, 2019.

Contingencies

From time to time, we may be involved in legal proceedings, as well as demands, claims and threatened litigation, which arise in the normal course of our business or otherwise. The ultimate outcome of any litigation is uncertain and unfavorable outcomes could have a negative impact on our results of operations and financial condition. Regardless of outcome, litigation can have an adverse impact on us because of the defense costs, diversion of management resources and other factors. We are not currently involved in any material legal proceedings.

8. Stockholders' Equity

Our authorized capital stock consists of 520,000,000 shares, all with a par value of $0.0001 per share, of which 500,000,000 shares are designated as common stock and 20,000,000 shares are designated as preferred stock. There were no shares of preferred stock outstanding as of September 30, 2020 and December 31, 2019.

Equity Offerings

In the second quarter of 2020, we issued and sold 12,633,039 shares of common stock at a public offering price of $11.32 per share and pre-funded warrants to purchase 2,866,961 shares of common stock at a public offering price of $11.3199 per warrant in an underwritten public offering pursuant to a shelf registration on Form S-3. We granted the underwriters an option to purchase up to 2,325,000 additional shares of our common stock at a public offering price of $11.32, less underwriting discounts and commissions. The full option was exercised by the underwriters in June 2020. The gross proceeds from this public offering were $201.8 million, resulting in net proceeds of $189.3 million, after deducting underwriting discounts and commissions and offering expenses payable by us.

Each pre-funded warrant entitles the holder to purchase one share of common stock at an exercise price of $0.0001 per share and expires seven years from the date of issuance. These warrants were recorded as a component of stockholders' equity within additional paid-in capital. Per the terms of the warrant agreement, a holder of the outstanding warrants is not entitled to exercise any portion of any pre-funded warrant if, upon exercise of the warrant, the holder's ownership (together with its affiliates) of our common stock or combined voting power of our securities beneficially owned by such holder (together with its affiliates) would exceed 9.99% after giving effect to the exercise ("Maximum Ownership Percentage"). Upon at least 61 days' prior notice to us by the holder, any holder may increase or decrease the Maximum Ownership Percentage to any other percentage not to exceed 19.99%. As of September 30, 2020, all 2,866,961 pre-funded warrants from this offering were outstanding.

As part of our July 2019 underwritten public offering, we also issued and sold pre-funded warrants to purchase 2,945,026 shares of common stock with terms similar to those above. As of September 30, 2020, pre-funded warrants to purchase 2,888,526 shares of our common stock from the July 2019 underwritten public offering were outstanding.

ATM Facilities

In February 2019, we entered into a sales agreement (the "2019 ATM Facility") with Cowen and Company, LLC ("Cowen"), which provides for the sale, in our sole discretion, of shares of our common stock, in the aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The issuance and sale of these shares by us pursuant to the 2019 ATM Facility are deemed "at the market" offerings as defined in Rule 415 under the Securities Act of 1933, as amended (the "Securities Act"), and are registered under the Securities Act. We pay a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2019 ATM Facility.

In February 2020, we entered into a new sales agreement (the "2020 ATM Facility") with Cowen, which provides for the sale, in our sole discretion, of shares of our common stock having an aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The 2020 ATM Facility is separate from and does not replace the 2019 ATM Facility in any way. The issuance and sale of these shares by us pursuant to the 2020 ATM Facility are deemed "at the market" offerings and are registered under the Securities Act of 1933. We will pay a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2020 ATM Facility.

During the three months ended September 30, 2020, we sold an aggregate of 2,581,768 shares of common stock under the ATM facilities, at an average price of $13.56 per share, for gross proceeds of $35.0 million and net proceeds of $34.1 million, after deducting commissions payable by us. For the nine months ended September 30, 2020, we sold an aggregate of 4,109,984 shares of common stock under the ATM facilities, at an average price of $14.28 per share, for gross proceeds of $58.7 million and net proceeds of $57.1 million, after deducting commissions and other offering expenses payable by us. On October 2, 2020, we received net proceeds of approximately $0.3 million from sales of shares of common stock under the 2020 ATM Facility that occurred during September 2020. On January 3, 2020, we received net proceeds of approximately $1.2 million from sales of shares of common stock under the 2019 ATM Facility that occurred during December 2019.

As of September 30, 2020, we have fully utilized the 2019 ATM Facility and $90.9 million of common stock remained available to be sold under the 2020 ATM Facility, subject to certain conditions as specified in the sales agreements.

Equity Incentive Plans

Under the terms of the 2014 Equity Incentive Plan, as amended ("2014 EIP"), we may grant stock options, restricted stock awards ("RSAs") and RSUs to employees, directors, consultants and other service providers. RSUs generally vest over four years. In 2020, we granted performance-based awards to certain of our employees that provide for the issuance of common stock if specified Company performance criteria related to our clinical programs are achieved. The number of performance-based awards that ultimately vests depends upon if, when and which performance criteria are achieved, as well as the employee's continuous service, as defined in the 2014 EIP, through the date of vesting. The fair value of performance-based RSUs is determined as the closing stock price on the date of grant.

Stock options are granted at prices no less than 100% of the estimated fair value of the shares on the date of grant as determined by the board of directors, provided, however, that the exercise price of an option granted to a 10% shareholder cannot be less than 110% of the estimated fair value of the shares on the date of grant. Options granted generally vest over four years and expire in seven to ten years. As of September 30, 2020, a total of 13,803,560 shares of common stock were reserved for issuance under the 2014 EIP, of which 2,434,930 shares were available for future grant and 11,368,630 shares were subject to outstanding options and RSUs, including performance-based awards.

In February 2018, we adopted the 2018 Inducement Plan ("Inducement Plan"), under which we may grant options, stock appreciation rights, RSAs and RSUs to new employees. In September 2020, we amended the Inducement Plan to reserve an additional 1,500,000 shares of the Company's common stock for issuance under the Inducement Plan, as amended. As of September 30, 2020, 2,634,836 shares of common stock were reserved for issuance under the Inducement Plan, of which 1,734,211 shares were available for future grant and 900,625 shares were subject to outstanding options and RSUs.

Restricted Stock Units

The following is a summary of RSU activity under our 2014 EIP and Inducement Plan:

	RSUs	
	Shares	Weighted Average Grant Date Fair Value
Unvested as of December 31, 2019	1,910,764	$ 26.93
Granted	3,880,991	$ 12.09
Forfeited	(650,540)	$ 19.18
Vested	(1,096,522)	$ 20.14
Unvested as of September 30, 2020	4,044,693	$ 15.78

As of September 30, 2020, there was $45.5 million of unrecognized stock-based compensation expense related to RSUs that is expected to be recognized over a weighted average period of 2.5 years. This excludes unrecognized stock-based compensation expense for performance-based RSUs that were deemed not probable of vesting in accordance with U.S GAAP.

Stock Options

The following is a summary of stock option activity under our 2014 EIP and Inducement Plan. The table below also includes the activity relating to options for 275,000 shares of our common stock which were issued in 2017 outside of these plans:

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2019	6,934,262	$ 28.25		
Granted	2,504,925	11.75		
Exercised	(132,911)	13.47		
Forfeited or expired	(1,081,714)	30.89		
Outstanding as of September 30, 2020	8,224,562	$ 23.12	6.5	$ 3,985

Aggregate intrinsic value represents the difference between the closing stock price of our common stock on September 30, 2020 and the exercise price of outstanding, in-the-money options. As of September 30, 2020, there was $55.4 million of unrecognized stock-based compensation expense related to stock options that is expected to be recognized over a weighted average period of 2.7 years.

Reserved Shares

The following shares of common stock were reserved for future issuance under our equity incentive plans as of September 30, 2020:

	Total Shares Reserved
2014 Equity Incentive Plan	13,803,560
2018 Inducement Plan	2,634,836
2014 Employee Stock Purchase Plan	1,066,654
Total reserved shares of common stock	17,505,050

Stock-based Compensation Expense

Total stock-based compensation expense related to all employee and non-employee stock awards was as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(in thousands)		(in thousands)	
Research and development	$ 8,151	$ 7,003	$ 24,341	$ 19,740
General and administrative	5,104	5,149	15,506	19,882
Total stock-based compensation expense	$ 13,255	$ 12,152	$ 39,847	$ 39,622

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

You should read the following discussion and analysis of our financial condition and results of operations together with our condensed consolidated financial statements and related notes included elsewhere in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2020. This discussion and other parts of this Quarterly Report contain forward-looking statements that involve risk and uncertainties, such as statements of our plans, objectives, expectations and intentions. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Quarterly Report, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

Atara Biotherapeutics is a pioneer in T-cell immunotherapy, leveraging its novel allogeneic EBV T-cell platform to develop transformative therapies forpatients with serious diseases, including solid tumors, hematologic cancers and autoimmune disease. With our lead program in Phase 3 clinical development, Atara is the most advanced allogeneic T-cell immunotherapy company and intends to rapidly deliver off-the-shelf treatments to patients with high unmet medical need. Our platform leverages the unique biology of EBV T cells and has the capability to treat a wide range of EBV-associated diseases or other serious diseases through incorporation of engineered chimeric antigen receptors (CARs) or T-cell receptors (TCRs). Atara is applying this one platform to create a robust pipeline. Our strategic priorities are:

- ***Tab-cel®***: Atara's most advanced T-cell immunotherapy, tab-cel® (tabelecleucel), currently in Phase 3 development for patients with Epstein-Barr virus (EBV) associated post-transplant lymphoproliferative disease (EBV+ PTLD) who have failed rituximab or rituximab plus chemotherapy, as well as other EBV-associated hematologic malignancies and solid tumors;
- ***ATA188***: T-cell immunotherapy targeting EBV antigens believed to be important for the potential treatment of multiple sclerosis;
- ***CAR T Programs***:
    - ***ATA2271***: Autologous CAR T immunotherapy targeting solid tumors expressing the tumor antigen mesothelin;
    - ***ATA3271***: Allogeneic CAR T therapy targeting mesothelin; and
    - ***ATA3219***: Allogeneic CAR T targeting CD19 and being developed as a potential best-in-class product, based on a next generation 1XX co-stimulatory domain and the innate advantages of EBV T cells as the foundation for an allogeneic CAR T platform.

Our T-cell immunotherapy platform includes the capability to progress both allogeneic and autologous programs and is potentially applicable to a broad array of targets and diseases. Our off-the-shelf, allogeneic T-cell platform allows for rapid delivery of a T-cell immunotherapy product manufactured in advance of patient need and stored in inventory, with each manufactured lot of cells providing therapy for numerous potential patients. This differs from autologous treatments, in which each patient's own cells must be extracted, genetically modified outside the body and then delivered back to the patient, and requires a complex logistics network. For our allogeneic programs, we select the appropriate set of cells for use based on a patient's unique immune profile. In addition, our manufacturing facility is capable of producing multiple types of therapies and Atara MatchMe™, our proprietary T-cell order management platform, is being developed to select and deliver the most appropriate treatments to the healthcare teams caring for patients.

We have entered into research collaborations with leading academic institutions such as Memorial Sloan Kettering Cancer Center (MSK), the Council of the Queensland Institute of Medical Research (QIMR Berghofer) and H. Lee Moffitt Cancer Center and Research Institute (Moffitt) to acquire rights to novel and proprietary technologies and programs.

We recognize that our clinical studies may not be available to all patients and we have established expanded access and compassionate use programs in instances where there is a significant patient need.

Pipeline

Tab-cel®

Atara's most advanced T-cell immunotherapy, tab-cel®, is in Phase 3 development for the treatment of patients with EBV+ PTLD who have failed rituximab or rituximab plus chemotherapy. Based on our market research, we estimate there were several hundred EBV+ PTLD patients who failed rituximab or rituximab plus chemotherapy in the U.S. in 2019. Tab-cel® is also under development for other EBV+ diseases with significant unmet medical need through a Phase 2 multi-cohort study that was initiated in the third quarter of 2020.

While clinical study operations and the opening of additional Phase 3 study sites in the United States, Canada and Europe have been impacted by the spread of COVID-19, most sites are currently open for patient enrollment. We continue to advance development of tab-cel® in Phase 3 for patients with EBV+ PTLD, for which the Company has obtained Breakthrough Therapy Designation (BTD) in the U.S. and PRIority MEdicines (PRIME) designation in the European Union (EU). We remain on track to initiate a biologics license application (BLA) submission for patients with EBV+ PTLD by the end of 2020. We plan to continue engaging with the FDA as part of our rolling BLA and BTD status and expect to finalize the BLA submission in the third quarter of 2021. We conducted an interim analysis for the Phase 3 study in the third quarter of 2020. Data from the interim analysis showed a 50% objective response rate (ORR) to tab-cel® with independent oncologic and radiographic assessment (IORA) in patients with EBV+PTLD following hematopoietic stem cell transplant (HCT) or solid organ transplant (SOT) that had reached at least 6 months follow-up after achieving a response. This ORR is consistent with previously published investigator assessed data. The tab-cel® safety profile is also consistent with previously published data, with no new safety signals. We presented a comprehensive data package to the FDA in October 2020 and reached alignment on several key topics related to the tab-cel® regulatory package, including that (i) a rolling submission is acceptable for the BLA, (ii) we can complete the BLA submission with currently enrolled patients with at least six months follow-up for duration of response, and (iii) the FDA will consider the data from the Phase 2 trials conducted at MSK, our Phase 2 multicenter expanded access protocol (EAP), and the Single Patient Use (SPU) program as supportive data to the pivotal study in the BLA clinical module. Data from this pivotal study will be presented at an appropriate forum in 2021. We remain in active discussions with the Pediatric Committee (PDCO) of the European Medicines Agency (EMA) regarding a Pediatric Investigation Plan (PIP). Following discussion with the PRIME team and after EMA approval of the PIP, which we currently expect to occur in December 2020, we plan to submit a tab-cel® EU marketing authorization application for patients with EBV+ PTLD in the second half of 2021.

In 2019, after discussion and alignment with regulators, we combined MATCH and ALLELE into a single study (which we now refer to as the ALLELE study) that now consists of an HCT cohort for EBV+ PTLD patients who have failed rituximab, and a single SOT cohort for EBV+ PTLD patients who have failed rituximab with both chemotherapy and non-chemotherapy prior treatment experience. Additionally, we expanded the ALLELE study geographically to include clinical sites outside the U.S. Our clinical trial applications (CTAs) in the United Kingdom, France, Germany, Spain, Austria, Belgium and Italy have been approved, and a number of European sites are open for enrollment.

We continue to pursue development of tab-cel® in earlier lines of therapy with the goal of expanding the potential label in PTLD and closely related diseases. We initiated a Phase 2 multi-cohort study in third quarter of 2020 concurrently in the U.S. and EU. We expect to enroll the first patient in the fourth quarter of 2020 and data from this Phase 2 study is expected in 2023. We intend to focus on extending further into immunodeficiency-associated lymphoproliferative diseases (IA-LPDs) as the next step in the tab-cel® potential label expansion given the commonality of their EBV-driven mechanism of disease in immunocompromised patients, high unmet medical need and positive clinical data to date with tab-cel®. The multi-cohort study will evaluate both treatment-naïve and previously treated patients in six patient populations, including four within IA-LPDs and two in other EBV-associated diseases. Data was featured in an e-poster at the European Society for Medical Oncology (ESMO) 2020 Virtual Congress in September 2020 and demonstrated that tab-cel® was well-tolerated and showed encouraging clinical activity in patients with EBV+ AID-LPD and EBV+ PID-LPD (Acquired and Primary Immunodeficiency Lymphoproliferative Diseases). In patients where previous treatments have failed, the objective response rates, including complete response, were 33.3% (three out of nine patients) in AID-LPD and 37.5% (three out of eight patients) in PID-LPD groups. Tab-cel® was generally well-tolerated with a favorable safety profile consistent with previously published clinical studies. Data on tab-cel® in patients with life-threatening complications stemming from persistent EBV viremia was accepted for presentation at the 62nd American Society of Hematology (ASH) Annual Meeting and Exposition being held virtually in December 2020. These clinical data demonstrate that tab-cel® was well-tolerated and showed encouraging clinical activity in this patient population with objective response rates ranging from 50% to 80%.

Our Phase 1b study of tab-cel® in combination with Merck's anti-PD-1 (programmed death receptor-1) therapy, KEYTRUDA® (pembrolizumab), in patients with platinum-resistant or recurrent EBV-associated nasopharyngeal carcinoma (NPC) achieved its safety endpoints and stable disease in some patients. These data will be presented at an appropriate forum in the future. Based on a strategic prioritization to expand tab-cel® business potential through the significant opportunity in IA-LPDs, we will focus our tab-cel® efforts on the execution of the Phase 2 multi-cohort study and the planned BLA initiation in EBV+ PTLD. At this time, we will not initiate the Phase 2 portion of the NPC study in combination with pembrolizumab. We intend to generate additional translational data in NPC in 2021 to further inform our strategy on this patient population.

ATA188

Atara is also developing ATA188, a T-cell immunotherapy targeting EBV antigens believed to be important for the potential treatment of multiple sclerosis (MS). In the fourth quarter of 2017, we initiated an open label, single arm, multi-center, multi-national Phase 1 study with allogeneic ATA188 for patients with progressive MS (PMS). The primary objective of this Phase 1 study is to assess the safety of ATA188 in patients followed for at least one year after the first dose. Key secondary endpoints in the study include measures of clinical improvement, using recognized scales for MS symptoms, function and disability including Expanded Disability Status Scale (EDSS) Fatigue Severity Score, MS Impact Scale-29 (physical), Timed 25-Foot Walk (T25FW), 9-Hole Peg Test, 12-Item MS Walking Scale (MSWS-12) and Visual Acuity.

Enrollment for the fourth and final dose escalation cohort in the Phase 1a portion of the study was completed in the third quarter of 2019 and we presented updated efficacy and safety results from this study at the MSVirtual2020: 8th Joint ACTRIMS-ECTRIMS Meeting in September 2020. The data demonstrated that ATA188 was well-tolerated across all four dose cohorts, with no dose-limiting toxicities and no fatal adverse events. Additionally, patients who demonstrated sustained disability improvement (SDI) at any timepoint maintained improvement at all future timepoints, and higher proportion of patients showed SDI with increasing dose (42% in cohorts 3 and 4 (higher doses) versus 17% in cohorts 1 and 2 (lower doses)). SDI is defined as clinically significant improvement in EDSS or T25FW observed at two consecutive time points. ATA188 treatment showed no clinically meaningful effect on cytokine levels and no dose-related safety trends were identified. Rhinorrhea (runny nose) was the only treatment-related event that occurred in more than one subject. No dose-limiting toxicities and no fatal adverse events have been reported. The safety profile has remained consistent with previously reported data. We also presented preclinical translation data at ACTRIMS-ECTRIMS that further support the proposed mechanism of action of ATA188 targeting EBV-infected B cells. These combined analyses of T cells comprising ATA188 are consistent with its proposed mechanism of targeting EBV-infected B cells by recognizing MS-relevant EBV antigens on these cells via defined TCRs. While these data will need to be confirmed in a double-blind, placebo-controlled, randomized study, they indicate the potential for the first treatment option in progressive MS to halt or reverse the progression of disease. We believe these results align with the body of evidence supporting the important role of EBV-infected B cells in the chronic autoimmune pathology of MS.

We are also re-treating patients with cohort 3 dose in an open-label extension (OLE) of the Phase 1a study and we presented the first available data from the OLE at the ACTRIMS-ECTRIMS Meeting. Data from the OLE with redosing at 12 months show that of the three patients enrolled in the OLE at that time that had SDI at 12 months, all maintained SDI at 15 months, including one patient evaluated at both 15 and 18 months who maintained SDI at both time points. A fourth patient demonstrated SDI during the OLE at 24 months. We will present additional data on OLE periodically over the next 12 months, including in an e-poster at the European Charcot Foundation (ECF) 28th Annual Meeting, to be held in November 2020.

Following a six-month assessment of patients in cohort 3 of this study, we selected the cohort 3 dose to initiate the Phase 1b randomized, double-blind, placebo-controlled trial (RCT) to evaluate the efficacy and safety of ATA188 in patients with PMS; the design allows for the addition of the cohort 4 dose, if desired. This study enrolled its first patient in June 2020 and continues active recruitment. In addition to measuring change in disability measures compared to baseline, especially SDI over time, the study also includes multiple measures of patients' function as well as various biomarkers. Based on encouraging clinical results to date in ATA188 studies and the significant unmet medical need in PMS, we are increasing our investment in the ATA188 program. We plan to expand the RCT to at least 64 patients and amend the RCT to change the primary end point of the study to disability improvement and maintain the biological and functional endpoints. We plan to discuss the Phase 1a data with the FDA by the end of this year, as well as the updated design of the RCT study, and the potential opportunities for accelerated development of ATA188.

ATA2271/ATA3271

Atara's next-generation CAR T immunotherapy programs include autologous ATA2271 and allogeneic ATA3271 targeting mesothelin, which is a tumor antigen expressed on a number of solid tumors including mesothelioma, ovarian cancer, pancreatic cancer, non-small cell lung cancer and other tumors over-expressing mesothelin. ATA2271 is designed to improve efficacy persistence, and durability of response versus CD28/CD3z-based CARs by using a novel 1XX CAR co-stimulatory signaling domain and cell intrinsic checkpoint inhibition technology with a PD-1 dominant negative receptor (DNR).

Data from investigational new drug (IND) enabling studies for ATA2271 were presented at the American Association for Cancer Research (AACR) Virtual Meeting II in June 2020. These data support the first application of the combination of 1XX co-stimulatory domain and cell intrinsic checkpoint inhibition technology with a PD-1 DNR that are associated with less cell exhaustion, improvements in functional persistence, serial cell killing and in vivo efficacy, which was maintained through multiple tumor re-challenges when compared with first-generation CD28/CD3z-based mesothelin CAR. The FDA accepted the IND application submitted by our collaborators at MSK in August 2020, providing clearance to initiate an open-label, single-arm Phase 1 clinical study of ATA2271 for patients with advanced mesothelioma. We expect to have safety and efficacy data from this study in 2021.

We are also developing and have initiated IND-enabling studies for ATA3271, an off-the-shelf, allogeneic CAR T therapy targeting mesothelin using a PD-1 DNR and 1XX CAR co-stimulatory signaling domain through our EBV T-cell platform, and we expect to file the IND in 2022. Preclinical data for ATA3271 demonstrates potent anti-tumor activity, functional persistence and significant survival benefit with no evidence of allocytotoxicity in vivo, suggesting that allogeneic MSLN-CAR-engineered EBV T cells are a promising approach for the treatment of MSLN-positive cancers. These data will be presented at the Society for Immunotherapy of Cancer (SITC) 35th Anniversary Annual Meeting in November 2020.

ATA3219

We are also developing ATA3219, an off-the-shelf, allogeneic CD19 CAR T immunotherapy targeting B-cell malignancies as a potential best-in-class therapy without the need for TCR gene editing, using our next-generation 1XX CAR co-stimulatory domain and EBV T-cell platform.

In February 2020, an academic off-the-shelf, allogeneic CD19 CAR T clinical study using an allogeneic EBV T-cell construct and CD28/CD3z co-stimulatory domain for patients with relapsed/refractory B-cell malignancies was presented at the 2020 Transplantation and Cellular Therapy (TCT) Meetings. Findings from this study provided initial clinical proof-of-principle that an EBV T-cell platform has the potential to generate off-the-shelf, allogeneic CAR T immunotherapies with high response rates, durable responses and low risk of toxicity that can be rapidly delivered to patients. An abstract detailing ATA3219 preclinical data was accepted for presentation at the 62nd American Society of Hematology (ASH) Annual Meeting and Exposition being held virtually in December 2020. These preclinical data for ATA3219 demonstrate persistence, polyfunctional phenotype and efficient targeting of CD19-expressing tumor cells, with no evidence of allocytotoxicity in vivo.

We had a pre-IND meeting with the FDA in October 2020, where we received feedback to guide the IND filing for ATA3219. We have initiated IND-enabling studies and expect to file the IND in 2021.

Additional Programs and Platform Expansion Activities

In addition to the prioritized programs described above, we have a number of preclinical programs. For example, in August 2018, we entered into a strategic collaboration with Moffitt. As part of this relationship, we agreed to collaborate with Moffitt to develop multi-targeted CAR T immunotherapies designed to address cancers with diverse cell types that often become resistant to treatment, such as acute myeloid leukemia (AML) (ATA2321) and B-cell malignancies (ATA2431), and to make certain milestone and royalty payments associated with the collaboration targets. In addition, the collaboration includes the use of novel CAR T intracellular co-stimulatory domains that may improve CAR T proliferation when responding to an appropriate antigen and enhance CAR T persistence by reducing T-cell exhaustion.

We believe our platform will have utility beyond the current set of targets to which it has been directed.We continue to evaluate additional product candidates, including those derived from collaborations with our partners. We expect to further research and develop additional cellular therapies, which may include T-cell programs targeted against other antigens as well as engineered T-cell immunotherapies such as CAR T-cell programs. We believe that viral antigens are well suited to adoptive immunotherapy given that people with normal immune systems are able to mount robust responses to these viral targets, but immunocompromised patients and some cancer patients are not. We also continue to evaluate opportunities to license or acquire additional product candidates or technologies to enhance our existing platform.

Manufacturing

Our manufacturing facility in Thousand Oaks, California has the flexibility to manufacture multiple T-cell and CAR T immunotherapies while integrating research and process science functions to enable increased collaboration for rapid product development. Our research and development and process and analytical development labs are currently supporting preclinical development activities. Our facility is designed to global regulatory standards, and the required facility commissioning and qualification activities to support clinical manufacturing are complete. We are in the process of completing our facility's commercial production qualification activities for tab-cel® while building inventory according to our commercial product supply strategy.

We continue to scale our EBV T-cell manufacturing platform to improve product yields from a single donor leukapheresis and have generated data confirming the use of stirred-tank perfusion bioreactors to improve yield and cell growth productivity. We believe our scale-up technology can potentially be a key enabler to deliver biologic-like cost of goods manufactured and could be leveraged across our portfolio, including our CAR T programs.

In addition to our manufacturing facility, we also work with Cognate BioServices, Inc. (Cognate) pursuant to a Commercial Manufacturing Services Agreement (the Manufacturing Agreement) that we entered into in December 2019. Pursuant to the Manufacturing Agreement, Cognate provides manufacturing services for certain of our product candidates. The initial term of the Manufacturing Agreement runs until December 31, 2021 and is renewable with Cognate's approval for an additional one-year period. We may terminate the Manufacturing Agreement for convenience on six months' written notice to Cognate, or immediately if Cognate is unable to perform the services under the Manufacturing Agreement or fails to obtain or maintain certain necessary approvals.

COVID-19 Business Update

We continue to closely monitor the impact of the ongoing COVID-19 pandemic on our business and operations and have taken steps to ensure the health and safety of our employees, staff, clinical site staff and patients and to maintain business continuity. Based on guidance issued by federal, state and local authorities, we have temporarily transitioned most of our employees and staff to a remote, work-from-home model, while maintaining essential in-person manufacturing and laboratory functions in order to advance key research, development and manufacturing priorities. We implemented safety protocols and procedures to support our onsite employees and staff.

In addition to implementing measures to protect the health and safety of our employees and staff, our clinical study and operational teams are working closely with clinical sites to ensure the safety of site staff and patients as well as preserve data integrity and access to treatment as appropriate. Where needed, remote study visits, leveraged tele-medicine, home health care, and other methods have been established to ensure continuity of care for patients while preserving key endpoint data.

To date, the COVID-19 pandemic has not materially impacted our or our partners' clinical, research and development, regulatory and manufacturing operations or timelines. We have experienced some transient delays in clinical trial site initiation and patient enrollment in certain of our clinical trials as a result of the evolving impact of the ongoing COVID-19 pandemic. For example, due to the COVID-19 pandemic, in April 2020 we temporarily paused the screening and enrollment of patients in our RCT for ATA188. We were able to resume such activities and enrolled the first patient in the study in June 2020. Our Phase 3 clinical trial of tab-cel® in patients with EBV+ PTLD has not been adversely impacted by the ongoing COVID-19 pandemic.

The full extent to which the COVID-19 pandemic may impact our business and operations is subject to future developments which are uncertain and difficult to predict. Further quarantines, shelter-in-place or similar restrictions and other actions taken or imposed by foreign, federal, state and local governments could adversely impact our or our partners' clinical, research and development, regulatory and manufacturing operations or timelines. We continue to monitor the impact of the COVID-19 pandemic on our business and operations and will seek to adjust our activities as appropriate. In addition, the pandemic could result in significant and prolonged disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect the financial resources available to us.

For additional information about risks and uncertainties related to the COVID-19 pandemic that may impact our business, financial condition and operations, see the section titled "Risk Factors" under Part II, Item 1A in this Quarterly Report on Form 10-Q.

Financial Overview

We have a limited operating history. Since our inception in 2012, we have devoted substantially all of our resources to identify, acquire and develop our product candidates, including conducting preclinical and clinical studies, acquiring or manufacturing materials for clinical studies, constructing our manufacturing facility and providing general and administrative support for these operations.

Our net losses were $225.3 million and $212.5 million for the nine months ended September 30, 2020 and 2019, respectively. As of September 30, 2020, we had an accumulated deficit of $1,043.3 million. Substantially all of our net losses have resulted from costs incurred in connection with our research and development programs and from general and administrative expenses associated with our operations. As of September 30, 2020, our cash, cash equivalents and short-term investments totaled $327.2 million, which we intend to use to fund our operations. In the second quarter of 2020, we completed an underwritten public offering of shares of common stock and pre-funded warrants and received aggregate net proceeds of $189.3 million.

Revenues

We have never generated revenues and have incurred losses since inception. We do not expect to receive any revenues from any product candidates that we develop until we obtain regulatory approval and commercialize our products or enter into collaborative agreements with third parties.

Research and Development Expenses

The largest component of our total operating expenses since inception has been our investment in research and development activities, including the preclinical and clinical development of our product candidates. Research and development expenses consist primarily of compensation and benefits for research and development employees, including stock-based compensation; expenses incurred under agreements with contract research organizations and investigative sites that conduct preclinical and clinical studies; the costs of acquiring and manufacturing clinical study materials and other supplies; payments under licensing and research and development agreements; other outside services and consulting costs; and facilities, information technology and overhead expenses. Research and development costs are expensed as incurred.

We plan to continue investment in the development of our product candidates. Our current planned research and development activities include the following:

- continuing to initiate sites and enroll patients in our Phase 3 clinical study of tab-cel® for the treatment of patients with EBV+ PTLD after HCT and SOT who have failed rituximab;
- process development, testing and manufacturing of drug supply to support clinical and IND-enabling studies;
- continuing development of ATA188 in progressive MS;
- continuing to develop product candidates based on our next-generation CAR T programs;
- continuing to develop our product candidates in additional indications, including tab-cel® for EBV+ cancers;
- continuing to develop other pre-clinical product candidates; and
- leveraging our relationships and experience to in-license or acquire additional product candidates or technologies.

In addition, we believe it is important to invest in the development of new product candidates to continue to build the value of our product candidate pipeline and our business. We plan to continue to advance our most promising early product candidates into preclinical development with the objective to advance these early-stage programs to human clinical studies over the next several years.

Our expenditures on current and future preclinical and clinical development programs are subject to numerous uncertainties in timing and cost to completion. The duration, costs, and timing of clinical studies and development of our product candidates will depend on a variety of factors, including:

- the availability of qualified drug supply for use in our ongoing Phase 3 or other clinical studies;
- the scope, rate of progress, and expenses of our ongoing clinical studies, potential additional clinical studies and other research and development activities;
- the potential review or reanalysis of our clinical study results;
- future clinical study results;
- uncertainties in clinical study enrollment rates or discontinuation rates of patients, including any potential impact of the COVID-19 pandemic;
- potential additional safety monitoring or other studies requested by regulatory agencies;
- changing medical practice patterns related to the indications we are investigating;
- significant and changing government regulation;
- disruptions caused by man-made or natural disasters or public health pandemics or epidemics, including, for example, the COVID-19 pandemic; and
- the timing and receipt of any regulatory approvals, as well as potential post-market requirements.

The process of conducting the necessary clinical research to obtain approval from the FDA and other regulators is costly and time consuming and the successful development of our product candidates is highly uncertain. The risks and uncertainties associated with our research and development projects are discussed more fully in the section of this report titled "1A. Risk Factors." As a result of these risks and uncertainties, we are unable to determine with any degree of certainty the duration and completion costs of our research and development projects, or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates that obtain regulatory approval. We may never succeed in achieving regulatory approval for any of our product candidates.

General and Administrative Expenses

General and administrative expenses consist primarily of compensation and benefits for legal, human resources, finance, commercial and other general and administrative employees, including stock-based compensation; professional services costs, including legal, patent, human resources, audit and accounting services; other outside services and consulting costs, including those related to pre-commercial activities; and information technology and facilities costs.

Interest and Other Income, net

Interest and other income, net consists primarily of interest earned on our cash, cash equivalents and short-term investments.

Critical Accounting Policies and Significant Judgments and Estimates

Except for the adoption of ASU No. 2016-13, as amended,*Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, and ASU No. 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, and ASU No. 2019-12,*Income Taxes (Topic 740): Simplifying the Accounting for Income*Taxes, none of which had a material impact to us as disclosed in Note 2 to our condensed consolidated financial statements, there have been no significant changes to our critical accounting policies and significant judgments and estimates during the nine months ended September 30, 2020 from those disclosed in our management's discussion and analysis of financial condition and results of operations included in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020.

Results of Operations

Comparison of the Three and Nine Months Ended September 30, 2020 and 2019

Research and development expenses

Research and development expenses consisted of the following costs, by program, in the periods presented:

	Three Months Ended September 30,		Increase	Nine Months Ended September 30,		Increase
	2020	2019	(Decrease)	2020	2019	(Decrease)
	(in thousands)			(in thousands)		
Tab-cel® expenses	$ 15,723	$ 11,115	$ 4,608	$ 45,426	$ 34,006	$ 11,420
ATA188, CAR T and other program expenses	4,127	8,852	(4,725)	14,339	24,060	(9,721)
Employee and overhead expenses	40,027	33,571	6,456	119,331	96,391	22,940
Total research and development expenses	$ 59,877	$ 53,538	$ 6,339	$ 179,096	$ 154,457	$ 24,639

Tab-cel® expenses were $15.7 million and $45.4 million in the three and nine months ended September 30, 2020, respectively, as compared to $11.1 million and $34.0 million in the comparative 2019 periods. The increases were primarily due to clinical trials and process performance qualification activities at our manufacturing facility, as well as increased activity to support our tab-cel® BLA filing.

ATA188, CAR T and other program expenses were $4.1 million and $14.3 million in the three and nine months ended September 30, 2020, respectively, as compared to $8.9 million and $24.1 million in the comparative 2019 periods. The decreases were primarily related to lower clinical study, manufacturing and other outside services costs for programs that are no longer in active development.

Employee and overhead expenses were $40.0 million and $119.3 million in the three and nine months ended September 30, 2020, respectively, as compared to $33.6 million and $96.4 million in the comparative 2019 periods. The increases were primarily due to higher compensation-related costs from increased headcountand higher facility-related costs in support of our continuing expansion of research and development activities. Relative to the 2019 comparative period, for the three months ended September 30, 2020, payroll and related costs increased by $4.8 million, facility-related costs increased by $1.3 million and outside services costs remained consistent. Relative to the 2019 comparative period, for the nine months ended September 30, 2020, payroll and related costs increased by $18.1 million, facility-related costs increased by $4.1 million and outside services costs increased by $0.7 million.

Total research and development expenses for the three and nine months ended September 30, 2020 have not been significantly impacted as a result of the COVID-19 pandemic.

General and administrative expenses

	Three Months Ended September 30,		Increase	Nine Months Ended September 30,		Increase
	2020	2019	(Decrease)	2020	2019	(Decrease)
		(in thousands)			(in thousands)	
General and administrative expenses	$ 14,829	$ 19,018	$ (4,189)	$ 48,259	$ 61,525	$ (13,266)

General and administrative expenses decreased to $14.8 million and $48.3 million in the three and nine months ended September 30, 2020, respectively, as compared to $19.0 million and $61.5 million in the comparative 2019 periods. The decrease between the three-month periods was primarily due to decreases in outside service costs and lower employee-related costs. The decrease between the nine-month periods was primarily due to decreases in outside services costs and lower non-cash stock-based compensation expenses. Total general and administrative expenses for the three and nine months ended September 30, 2020 have not been significantly impacted as a result of the COVID-19 pandemic.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception in 2012, we have funded our operations primarily through the issuance of common and preferred stock and pre-funded warrants to purchase common stock.

In the second quarter of 2020, we completed an underwritten public offering of 14,958,039 shares, inclusive of the exercise of the full option granted to the underwriters, of common stock at a public offering price of $11.32 per share and pre-funded warrants to purchase 2,866,961 shares of common stock at a public offering price of $11.3199 per warrant. We received net proceeds of approximately $189.3 million after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

In February 2019, we entered into a sales agreement (the 2019 ATM Facility) with Cowen and Company, LLC (Cowen), which provides for the sale, in our sole discretion, of shares of our common stock having an aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The issuance and sale of these shares by us pursuant to the 2019 ATM Facility are deemed “at the market” offerings defined in Rule 415 under the Securities Act of 1933, as amended (the Securities Act), and are registered under the Securities Act. We pay a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2019 ATM Facility.

In February 2020, we entered into a new sales agreement (the 2020 ATM Facility) with Cowen, which provides for the sale, in our sole discretion, of shares of our common stock having an aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The 2020 ATM Facility is separate from and does not replace the 2019 ATM Facility in any way. The issuance and sale of these shares by us pursuant to the 2020 ATM Facility are deemed “at the market” offerings and are registered under the Securities Act. We will pay a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2020 ATM Facility.

During the three months ended September 30, 2020, we sold an aggregate of 2,581,768 shares of common stock under the ATM facilities, at an average price of $13.56 per share, for net proceeds of $34.1 million, after deducting commissions payable by us. For the nine months ended September 30, 2020, we sold an aggregate of 4,109,984 shares of common stock under the ATM facilities, at an average price of $14.28 per share for net proceeds of $57.1 million, after deducting commissions and other offering expenses payable by us. On October 2, 2020, we received net proceeds of approximately $0.3 million from sales of shares common stock under the 2020 ATM Facility that occurred during September 2020. On January 3, 2020, we received net proceeds of approximately $1.2 million from sales of shares of our common stock under the 2019 ATM Facility that occurred during December 2019.

As of September 30, 2020, we have fully utilized the 2019 ATM Facility and $90.9 million of common stock remained available to be sold under the 2020 ATM Facility, subject to certain conditions as specified in the agreement.

We have incurred losses and negative cash flows from operations in each year since inception. As of September 30, 2020, we had an accumulated deficit of $1,043.3 million. We do not expect to receive any revenues from any product candidates that we develop until we obtain regulatory approval and commercialize our products. As such, we anticipate that we will continue to incur losses in the foreseeable future. Additionally, as a result of the COVID-19 pandemic, we have experienced, and may experience in the future, disruptions that could severely impact our business, preclinical studies and clinical trials. We expect that our operating expenses will continue to increase. As a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements. We may borrow funds on terms that may include restrictive covenants, including covenants that restrict the operation of our business, liens on assets, high effective interest rates and repayment provisions that reduce cash resources and limit future access to capital markets. In addition, we expect to continue to opportunistically seek access to additional funds through additional public or private equity offerings or debt financings including by utilizing the 2020 ATM Facility, through potential collaborations, partnering or other strategic arrangements, or a combination of the foregoing. However, the trading prices for our common stock and other biopharmaceutical companies have been highly volatile as a result of the COVID-19 pandemic. As a consequence, we may face difficulties raising capital through sales of our common stock or such sales may be on unfavorable terms. We may face similar difficulties in obtaining funding through debt financing or other arrangements. To the extent that we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. To the extent that we raise additional funds through collaboration or partnering arrangements, we may be required to relinquish some of our rights to our technologies or rights to market and sell our products in certain geographies, grant licenses or other rights on terms that are not favorable to us, or issue equity that may be substantially dilutive to our stockholders.

Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Currently, our cash, cash equivalents and short-term investments are held in bank and custodial accounts and consist of money market funds, U.S. Treasury, government agency and corporate debt obligations, commercial paper and asset-backed securities. We expect that existing cash, cash equivalents and short-term investments as of September 30, 2020 will be sufficient to fund our planned operations into 2022.

Our cash, cash equivalents and short-term investments balances as of the dates indicated were as follows:

	September 30, 2020	December 31, 2019
	(in thousands)	
Cash and cash equivalents	$ 62,620	$ 74,317
Short-term investments	264,565	184,792
Total cash, cash equivalents and short-term investments	$ 327,185	$ 259,109

Cash Flows

Comparison of the Nine Months Ended September 30, 2020 and 2019

The following table details the primary sources and uses of cash for each of the periods set forth below:

	Nine Months Ended September 30,	
	2020	2019
	(in thousands)	
Net cash (used in) provided by:		
Operating activities	$ (176,639)	$ (176,936)
Investing activities	(83,836)	59,332
Financing activities	248,778	151,337
Net (decrease) increase in cash, cash equivalents and restricted cash	$ (11,697)	$ 33,733

Operating activities

Net cash used in operating activities was $176.6 million in the 2020 period as compared to $176.9 million in the 2019 period. The decrease of $0.3 million was primarily due to a decrease in working capital usage and a decrease in accretion of investment discounts, offset by an increase in net loss.

Investing activities

Net cash used in investing activities in the 2020 period consisted of $279.2 million used to purchase available-for-sale securities and $3.9 million in purchases of property and equipment, partially offset by $199.3 million received from maturities and sales of available-for-sale securities. Net cash provided by investing activities in the 2019 period consisted primarily of $209.4 million received from maturities and sales of available-for-sale securities, partially offset by $147.2 million used to purchase available-for-sale securities and $3.0 million in purchases of property and equipment.

Financing activities

Net cash provided by financing activities in the 2020 period consisted primarily of $189.3 million of net proceeds received from the underwritten public offering of common stock and pre-funded warrants, $58.0 million of net proceeds received from the ATM facilities and $3.4 million of net proceeds from employee stock award transactions, partially offset by $1.5 million of taxes paid related to the net share settlement of RSUs. Net cash provided by financing activities in the 2019 period consisted primarily of $140.9 million of net proceeds received from the underwritten public offering of common stock and pre-funded warrants, $12.6 million of net proceeds from the 2019 ATM Facility and $4.9 million of net proceeds from employee stock award transactions, partially offset by $6.7 million of taxes paid related to the net share settlement of RSUs.

Operating Capital Requirements and Plan of Operations

To date, we have not generated any revenue from product sales. We do not know when, or if, we will generate any revenue from product sales. We do not expect to generate significant revenue from product sales unless and until we obtain regulatory approval of and commercialize one of our current or future product candidates. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the accumulated losses to increase as we continue the development of and seek regulatory approvals for our product candidates and begin to commercialize any approved products. We are subject to all of the risks inherent in the development of new products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. We anticipate that we will need to raise substantial additional funding in connection with our continuing and expected expansion of our operations.

We expect that our existing cash, cash equivalents and short-term investments will be sufficient to fund our planned operations into 2022. In order to complete the process of obtaining regulatory approval for any of our product candidates and to build the sales, marketing and distribution infrastructure that we believe will be necessary to commercialize our product candidates, if approved, we will require substantial additional funding. In addition, we expect to continue to opportunistically seek access to additional funds through additional public or private equity offerings or debt financings, through potential collaborations, partnering or other strategic arrangements, or a combination of the foregoing.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all of our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical products, we are unable to estimate the exact amount of our operating capital requirements. Our future funding requirements will depend on many factors, including, but not limited to:

- the timing, costs and results of our ongoing and planned clinical and preclinical studies for our product candidates, including any potential impact of the COVID-19 pandemic;
- our success in establishing and scaling commercial manufacturing capabilities;
- the number and characteristics of product candidates that we pursue;
- the outcome, timing and costs of seeking regulatory approvals;
- subject to receipt of regulatory approval, costs associated with the commercialization of our product candidates and the amount of revenues received from commercial sales of our product candidates;
- the terms and timing of any future collaborations, licensing, consulting or other arrangements that we may establish;
- the amount and timing of any payments we may be required to make in connection with the licensing, filing, prosecution, maintenance, defense and enforcement of any patents or patent applications or other intellectual property rights;
- the extent to which we in-license or acquire other products and technologies; and
- the timing of capital expenditures, including the qualification of our manufacturing facility.

Until we are able to generate a sufficient amount of product revenue and generate positive net cash flows from operations, which we may never do, meeting our long-term capital requirements is in large part reliant on access to public and private equity and debt capital markets, augmented by cash generated from operations and interest income earned on the investment of our cash balances. We expect to continue to seek access to the equity and debt capital markets to support our development efforts and operations. To the extent that we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. To the extent that we raise additional funds through collaboration or partnering arrangements, we may be required to relinquish some of our rights to our technologies or rights to market and sell our products in certain geographies, grant licenses or other rights on terms that are not favorable to us, or issue equity that may be substantially dilutive to our stockholders.

As a result of economic conditions, general global economic uncertainty, political change and other factors, including the ongoing COVID-19 pandemic, we do not know whether additional capital will be available when needed, or that, if available, we will be able to obtain additional capital on reasonable terms. If we are unable to raise additional capital due to the volatile global financial markets, general economic uncertainty or other factors, we will be forced to delay, limit, reduce or terminate preclinical studies, clinical studies or other development activities for one or more of our product candidates.

Contractual Obligations and Commitments

We lease our corporate headquarters in South San Francisco, California under a non-cancellable lease agreement for approximately 13,670 square feet of office space. In October 2020, we entered into an amendment of this lease to extend the lease term by one year and an option to extend the lease for an additional five years. The amended lease expires in May 2022.

In February 2017, we entered into a lease agreement for approximately 90,580 square feet of office, lab and cellular therapy manufacturing space in Thousand Oaks, California. The initial 15-year term of this lease commenced in February 2018, and the contractual obligations during the initial term are $16.4 million in aggregate. We have the option to extend this lease for two additional periods of ten and nine years, respectively, after the initial term. In connection with this lease, we were required to issue a letter of credit in the amount of $1.2 million to the landlord, which is recorded as long-term restricted cash in our condensed consolidated balance sheet.

In November 2018, we entered into a lease agreement for approximately 51,160 square feet of office space in Thousand Oaks, California. The initial term of this lease expires in February 2026. The contractual obligations during the initial term are $8.5 million in aggregate. We have the option to extend the lease for an additional period of five years after the initial term.

In May 2019, we entered into a new lease agreement for our approximately 8,800 square feet of office and lab space in Aurora, Colorado. The term of this lease expires in April 2024. The contractual obligations during the lease term are $1.1 million in aggregate.

Our contractual obligations primarily consist of our obligations under non-cancellable operating and finance leases and contracts we enter into in the normal course of business with clinical research organizations for clinical studies, with contract manufacturing organizations for clinical supplies, and with other vendors for preclinical studies and supplies and other services and products for operating purposes. These contracts generally provide for termination on notice, with the exception of one of our contract manufacturing agreements which we may terminate for convenience upon six months' written notice. There have been no material changes to our contractual obligations and commitments reported in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020.

Off-Balance Sheet Arrangements

We did not have, and we do not currently have, any off-balance sheet arrangements, as defined in the rules and regulations of the SEC, during the periods presented.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

During the nine months ended September 30, 2020, there were no material changes to our interest rate risk disclosures, market risk disclosures and foreign currency exchange rate risk disclosures reported in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on February 27, 2020.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Under the supervision of our Chief Executive Officer and Chief Financial Officer, we evaluated the effectiveness of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act as of September 30, 2020. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of September 30, 2020 to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely discussion regarding required disclosures. In designing and evaluating our disclosure controls and procedures, management recognizes that any disclosure controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the nine months ended September 30, 2020 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting. We have not experienced any material impact to our internal controls over financial reporting despite the fact that most of our employees are working remotely due to the COVID-19 pandemic. We are continually monitoring and assessing the COVID-19 situation to minimize the impact to the design and operating effectiveness of our internal controls.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. Investors should carefully consider all of the risk factors and uncertainties described below, in addition to the other information contained in this Quarterly Report on Form 10-Q, including the section of this report titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated and combined financial statements and related notes, before investing in our common stock.

The risks described below may not be the only ones relating to our company and additional risks that we currently believe are immaterial may also affect us.If any of these risks, including those described below, materialize, our business, competitive position, reputation, financial condition, results of operations, cash flows and future prospects could be seriously harmed. In these circumstances, the market price of our common stock could decline, and investors may lose all or a part of their investment.

Summary Risk Factors

Our business is subject to numerous risks and uncertainties that may have a material adverse effect on our business, financial condition or results of operations. These risks are more fully described below. These risks include, among others:

- we have incurred substantial losses since our inception and anticipate that we will continue to incur substantial and increasing losses for the foreseeable future;
- we currently have no source of revenues and may never generate revenues or achieve profitability;
- we are early in our development efforts, and we will need to successfully complete preclinical and clinical testing of our product candidates before we can seek regulatory approval and potentially generate commercial sales;
- we will require substantial additional financing to achieve our goals, which may not be available to us on acceptable terms, or at all;
- our future success depends on our ability to retain our executive officers and to attract, retain and motivate qualified personnel;
- the results of preclinical studies or earlier clinical studies are not necessarily predictive of future results, and product candidates we advance into clinical studies may not have favorable results in later clinical studies or receive regulatory approval;
- clinical drug development, both in the U.S. and international jurisdictions, involves a lengthy and expensive process with an uncertain outcome and even if our product candidates receive regulatory approval, they may still face future development and regulatory difficulties;
- our T-cell immunotherapy product candidates and our next-generation CAR T programs represent new therapeutic approaches that could result in heightened regulatory scrutiny and delays in or our inability to achieve regulatory approval, commercialization or payor coverage of our product candidates;
- 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;
- we may not be able to obtain or maintain orphan drug exclusivity for our product candidates;
- the COVID-19 pandemic continues to impact our business and operations and could materially and adversely affect our business and operations in the future, as well as the businesses and operations of third parties on which we rely;
- our success depends upon our ability to obtain and maintain sufficient intellectual property protection for our product candidates, and we may not be able to protect our intellectual property rights throughout the world;
- our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval; and
- we may not be able to obtain and maintain the relationships with third parties that are necessary to develop, commercialize and manufacture some or all of our product candidates.

Risks Related to Our Financial Results and Capital Needs

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

We are a clinical-stage biopharmaceutical company. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that product candidates will fail to prove effective, gain regulatory approval or become commercially viable. We do not have any products approved by regulatory authorities and have not generated any revenues from product sales or otherwise to date, and have incurred significant research, development and other expenses related to our ongoing operations and expect to continue to incur such expenses. As a result, we have not been profitable and have incurred significant operating losses in every reporting period since our inception. For the nine months ended September 30, 2020, we reported a net loss of $225.3 million and we had an accumulated deficit of $1,043.3 million as of September 30, 2020.

We do not expect to generate revenues for the foreseeable future, if at all. We expect to continue to incur significant expenses and operating losses for the foreseeable future. We anticipate these losses to increase as we continue to research, develop and seek regulatory approvals for our product candidates and any additional product candidates we may acquire, in-license or develop, and potentially begin to commercialize product candidates that may achieve regulatory approval. 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 revenues. If any of our product candidates fails in clinical studies or does not gain regulatory approval, or if approved, fails to achieve market acceptance, we may never become profitable. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. We anticipate that our expenses will increase in the future as we continue to invest in research and development of our existing product candidates, investigate and potentially acquire new product candidates and expand our manufacturing and commercialization activities.

We have a limited operating history, which may make it difficult to evaluate the success of our business to date and to assess our future viability.

Our company was formed in August 2012. Our operations to date have been limited to organizing and staffing our company, acquiring product and technology rights and conducting product development activities for our product candidates. We have not yet demonstrated our ability to successfully complete any Phase 2 or Phase 3 clinical studies, obtain regulatory approval, consistently manufacture a commercial scale product or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful commercialization for any of our product candidates. In addition, the adoptive immunotherapy technology underlying our T-cell product candidates, including our next-generation CAR T programs, is new and largely unproven. Any predictions about our future success, performance or viability, particularly in view of the rapidly evolving immunotherapy field, may not be as accurate as they could be if we had a longer operating history or approved products on the market.

In addition, as a young business, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. We will need to transition at some point from a company with a research and development focus to a company capable of supporting commercial activities. We may not be successful in such a transition. We expect our financial condition and operating results to continue to fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, any of our quarterly or annual periods' results are not indicative of future operating performance.

We currently have no source of revenues. We may never generate revenues or achieve profitability.

To date, we have not generated any revenues from product sales or otherwise. Even if we are able to successfully achieve regulatory approval for our product candidates, we do not know when we will generate revenues or become profitable, if at all. Our ability to generate revenues from product sales and achieve profitability will depend on our ability to successfully commercialize products, including any of our current product candidates, and other product candidates that we may develop, in-license or acquire in the future. Our ability to generate revenues and achieve profitability also depends on a number of additional factors, including our ability to:

- successfully complete development activities, including the necessary clinical studies with positive results;
- complete and submit regulatory submissions to the FDA, EMA or other agencies and obtain regulatory approval for indications for which there is a commercial market;
- obtain coverage and adequate reimbursement from third parties, including government and private payors;
- set commercially viable prices for our products, if any;
- develop manufacturing and distribution processes for our novel T-cell immunotherapy product candidates;

- develop commercial quantities of our products at acceptable cost levels;
- establish and maintain adequate supply of our products, including cell lines with sufficient breadth to treat patients;
- establish and maintain manufacturing relationships with reliable third parties or qualify our manufacturing facility such that we can maintain the supply of our products by ensuring adequate, manufacturing of bulk drug substances and drug products in a manner that is compliant with global legal requirements;
- achieve market acceptance of our products, if any;
- attract, hire and retain qualified personnel;
- protect our rights in our intellectual property portfolio;
- develop a commercial organization capable of sales, marketing and distribution for any products we intend to sell ourselves in the markets in which we choose to commercialize on our own; and
- find suitable distribution partners to help us market, sell and distribute our approved products in other markets.

Our revenues for any product candidate for which regulatory approval is obtained will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval, the accepted price for the product, the ability to get reimbursement at any price, and whether we own the commercial rights for that territory. If the number of our addressable disease patients is not as significant as we estimate, the indication approved by regulatory authorities is narrower than we expect, or the reasonably accepted population for treatment is narrowed by competition, physician choice, treatment guidelines or a reduction in the incidence of the addressable disease, we may not generate significant revenues from sales of our products, even if approved. In addition, we anticipate incurring significant costs associated with commercializing any approved product candidate. As a result, even if we generate revenues, we may not become profitable and may need to obtain additional funding to continue operations. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and may be forced to reduce our operations.

We will require substantial additional financing to achieve our goals, and a failure to obtain this necessary capital when needed could force us to delay, limit, reduce or terminate our product development or commercialization efforts.

We expect to expend substantial resources for the foreseeable future to continue the clinical development and manufacturing of our T-cell immunotherapy product candidates, and the advancement and expansion of our preclinical research pipeline. We also expect to continue to expend resources for the development and manufacturing of product candidates and the technology we have licensed or have an exclusive right to license from our partners. These expenditures will include costs associated with research and development, potentially acquiring or licensing new product candidates or technologies, conducting preclinical and clinical studies and potentially obtaining regulatory approvals and manufacturing products, as well as marketing and selling products approved for sale, if any. Under the terms of our license agreements with each of our partners, we are obligated to make payments upon the achievement of certain development, regulatory and commercial milestones. We will also need to make significant expenditures to develop a commercial organization capable of sales, marketing and distribution for any products, if any, that we intend to sell ourselves in the markets in which we choose to commercialize on our own. In addition, other unanticipated costs may arise. Because the design and outcome of our ongoing, planned and anticipated clinical studies is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of our product candidates.

Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of researching and developing our product candidates, and conducting preclinical and clinical studies;
- the timing of, and the costs involved in, obtaining regulatory approvals for our product candidates, if clinical studies are successful, including any costs from post-market requirements;
- the cost of commercialization activities for our product candidates, if any of these product candidates is approved for sale, including marketing, sales and distribution costs;
- the cost of manufacturing our product candidates for clinical studies in preparation for regulatory approval and in preparation for commercialization;
- our ability to establish and maintain strategic licensing or other arrangements and the financial terms of such agreements;
- the costs to develop, acquire or in-license future product candidates or technologies;
- the costs involved in preparing, filing, prosecuting, maintaining, expanding, defending and enforcing patent claims, including litigation costs and the outcome of such litigation;
- the timing, receipt and amount of sales of, or royalties on, our future products, if any; and
- the emergence of competing technologies or other adverse market developments.

We believe that our existing cash, cash equivalents and short-term investments will be sufficient to fund our planned operations into 2022. As of September 30, 2020, we had total cash, cash equivalents and short-term investments of $327.2 million. However, our operating plan may change as a result of many factors currently unknown to us, and we may need additional funds sooner than planned.

We do not have any committed external source of funds. While we expect to continue to opportunistically seek access to additional fundsthrough additional public or private equity offerings or debt financings, through potential collaborations, partnering or other strategic arrangements, or a combination of the foregoing, additional funds may not be available when we need them on terms that are acceptable to us, or at all. Our ability to raise additional capital may be adversely impacted by potential worsening global economic conditions and the recent disruptions to and volatility in the credit and financial markets in the United States and worldwide, including the trading price of common stock, resulting from the ongoing COVID-19 pandemic. If adequate funds are not available to us on a timely basis, we may be required to delay, limit, reduce or terminate preclinical studies, clinical studies or other development activities for one or more of our product candidates or delay, limit, reduce or terminate our establishment of sales, marketing and distribution capabilities or other activities that may be necessary to commercialize our product candidates.

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our product candidates on terms that are unfavorable to us.

We may seek required additional capital through a variety of means, including through private and public equity offerings and debt financings. To the extent that we raise additional capital through the sale of equity or convertible debt securities, or if existing holders of warrants exercise their rights to purchase common stock, the ownership interest of existing stockholders will be diluted, and the terms may include liquidation or other preferences that adversely affect the rights of stockholders. To the extent equity valuations, including the trading price of our common stock, are depressed as a result of economic disruptions and uncertainty concerning the COVID-19 pandemic or other factors, the potential magnitude of this dilution will increase. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take certain actions, including incurring additional debt, making capital expenditures, entering into licensing arrangements, or declaring dividends. If we raise additional funds from third parties, we may have to relinquish valuable rights to our technologies or product candidates or grant licenses or other rights on terms that are not favorable to us. If we are unable to raise additional funds through equity or debt financing when needed, we may be required to delay, limit, reduce or terminate our product development or commercialization efforts for our product candidates, grant to others the rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves or take other actions that are adverse to our business.

Risks Related to the Development of Our Product Candidates

We are early in our development efforts and have only a small number of product candidates in clinical development. All of our other product candidates are still in preclinical development. If we or our collaborators are unable to successfully develop and commercialize product candidates or experience significant delays in doing so, our business may be materially harmed.

We are early in our development efforts, and only a small number of our product candidates are in clinical development. The majority of our product candidates are currently in preclinical development. We have invested substantial resources in identifying and developing potential product candidates, conducting preclinical and clinical studies, manufacturing activities and preparing for the potential commercial launch of our product candidates. Our ability to generate revenues, which we do not expect will occur for several years, if ever, will depend heavily on the successful development and eventual commercialization of our product candidates. The success of our product candidates will depend on many factors, including the following:

- completion of preclinical and clinical studies with positive results;
- receipt of regulatory approvals from applicable authorities;
- protecting our rights in our intellectual property portfolio, including by obtaining and maintaining patent and trade secret protection and regulatory exclusivity for our product candidates;
- establishing or making arrangements with third-party manufacturers or qualifying our own manufacturing facility for clinical and commercial manufacturing purposes;
- developing manufacturing and distribution processes for our novel T-cell product candidates and next-generation CAR T programs;
- manufacturing our product candidates at an acceptable cost;
- launching commercial sales of our products, if approved by applicable regulatory authorities, whether alone or in collaboration with others;
- acceptance of our products, if approved by applicable regulatory authorities, by patients and the medical community;
- obtaining and maintaining coverage and adequate reimbursement by third-party payors, including government payors, for our products, if approved by applicable regulatory authorities;
- effectively competing with other therapies;
- maintaining a continued acceptable benefit/risk profile of the products following approval; and
- maintaining and growing an organization of scientists and functional experts who can develop and commercialize our products and technology.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully develop and commercialize our product candidates, which could materially harm our business.

Our business and operations have been affected by and could be materially and adversely affected in the future by the effects of health epidemics and pandemics, including the evolving and ongoing effects of the COVID-19 pandemic. The COVID-19 pandemic continues to impact our business and operations and could materially and adversely affect our business and operations in the future, as well as the businesses and operations of third parties on which we rely.

Our business could be adversely affected by health epidemics and pandemics, including the ongoing COVID-19 pandemic, which has presented a substantial public health and economic challenge around the world and has affected, and continues to affect, our employees, patients, communities and business operations, as well as the U.S. economy and financial markets. The COVID-19 pandemic has resulted in transient, episodic travel and other restrictions to reduce the spread of the disease and included a California executive order and many other foreign, state and local orders (including in locations where we operate facilities), which, among other things, direct individuals to shelter at their places of residence, direct businesses and governmental agencies to cease non-essential operations at physical locations, prohibit certain non-essential gatherings and order cessation of non-essential travel. As a result of the ongoing COVID-19 pandemic, the work-from-home model we implemented for most of our employees remains in place. We continue to maintain essential in-person manufacturing and laboratory functions in order to advance key research, development and manufacturing priorities. In connection with these measures, we may be subject to claims based upon, arising out of, or related to COVID-19 and our actions and responses thereto, including any determinations that we may make to continue to operate or to re-open our facilities where permitted by applicable law. The effects of current and potential future state executive orders, local shelter-in-place orders, government-imposed quarantines and our work-from-home policies and other similar, and perhaps more severe, actions may negatively impact productivity, disrupt our business and delay our clinical programs and timelines, the magnitude of which will depend, in part, on the length and severity of the restrictions and other limitations on our ability to conduct our business in the ordinary course.

Further quarantines, shelter-in-place or similar restrictions and other actions taken by foreign, federal, state and local governments, or the perception that such orders, shutdowns or other restrictions on the conduct of business operations could occur or could be reinstated, related to the ongoing COVID-19 pandemic or other infectious diseases, could impact our manufacturing capabilities and third-party manufacturing facilities in the United States and other countries, or the availability or cost of materials, which would disrupt our supply chain. In particular, standard transportation channels have been impacted and we and other manufacturing, testing, product disposition, contract manufacturing organizations and external testing laboratories are subject to enhanced risk assessment and mitigation measures. In addition, there have been and may continue to be interruptions in the supply of leukapheresis collections, which supply raw materials used in our products. Our clinical trials may be affected by health epidemics and have been affected by the ongoing COVID-19 pandemic. Clinical site initiation and patient enrollment have experienced delays as a result of the ongoing COVID-19 pandemic, including due to the prioritization of hospital resources toward COVID-19 and away from clinical trials or as a result of changing practice patterns that impact the diseases our trials address. Some patients may not be able to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services or if patients contract COVID-19 or are forced to quarantine. For example, while most clinical trial sites for our studies, including our Phase 3 clinical trial of tab-cel® in patients with EBV+ PTLD, remain open to enrollment for patients, some sites have limited the screening and enrollment of new patients due to governmental orders related to COVID-19, or fear of infection of COVID-19, have limited, and may continue to limit, patients' abilities to access clinical sites. COVID-19-related travel restrictions may also interrupt key clinical trial activities, such as clinical trial site data monitoring and efficacy, safety and translational data collection, processing and analyses. At the outset of the COVID-19 pandemic, we observed a temporary slow-down in stem cell and solid organ transplant volumes, which may have decreased the eligible patient population for the tab-cel® phase 3 study. In April 2020, we initiated a temporary pause in the screening and enrollment of patients in our RCT of ATA188 in patients with progressive MS. Although we were able to resume the screening and enrollment of patients in our RCT of ATA188and enrolled the first patient in the study in June 2020, the ongoing COVID-19 pandemic may require us to institute another pause in the screening and enrollment of patients in our RCT. Similarly, our ability to recruit and retain principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19, may be adversely impacted.

In addition, while the potential economic impact brought by, and the duration of, the COVID-19 pandemic and the various actions taken in response to it may be difficult to assess or predict, the pandemic could result in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock.

While we expect the ongoing COVID-19 pandemic to continue to adversely affect our business operations, the extent of the impact on our clinical development and regulatory efforts and the value of and market for our common stock will depend on future developments that are highly uncertain and cannot be predicted with confidence at this time, such as the ultimate duration of the pandemic, travel restrictions, quarantines, social distancing and business closure requirements in the U.S. and in other countries, and the effectiveness of actions taken globally to contain and treat COVID-19. In addition, to the extent the evolving effects of the ongoing COVID-19 pandemic adversely affect our business and results of operations, it may also have the effect of heightening many of the other risks and uncertainties described elsewhere in this "Risk Factors" section.

Our future success is dependent on the regulatory approval of our product candidates.

We do not have any products that have gained regulatory approval. Currently, our prioritized clinical-stage product candidates include tab-cel® and ATA188. Our business is substantially dependent on our ability to obtain regulatory approval for, and, if approved, to successfully commercialize our product candidates in a timely manner.

We cannot commercialize product candidates in the U.S. without first obtaining regulatory approval for the product from the FDA; similarly, we cannot commercialize product candidates outside of the U.S. without obtaining regulatory approval from comparable foreign regulatory authorities. Before obtaining regulatory approvals for the commercial sale of any product candidate for a target indication, we must demonstrate with substantial evidence gathered in preclinical and clinical studies, that the product candidate is safe and effective for use for that target indication and that the manufacturing facilities, processes and controls are adequate with respect to such product candidate to assure safety, purity and potency.

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

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

- disagreement with the design or conduct of our clinical studies;
- failure to demonstrate positive benefit/risk profile of the product candidate for its proposed indication;
- failure of clinical studies to meet the level of statistical significance required for approval;
- disagreement with our interpretation of data from preclinical studies or clinical studies;
- the insufficiency of data collected from clinical studies of our product candidates to support the submission and filing of a BLA or other submission or to obtain regulatory approval;
- failure to obtain approval of our manufacturing processes or facilities of third-party manufacturers with whom we contract for clinical and commercial supplies or our own manufacturing facility; or
- changes in the approval policies or regulations that render our preclinical and clinical data insufficient for approval.

The FDA or a comparable foreign regulatory authority may require more information, including additional preclinical or clinical data to support approval, which may delay or prevent approval and our commercialization plans, or we may decide to abandon the development program. If we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request (including failing to approve the most commercially promising indications), may grant approval contingent on the performance of costly post-marketing clinical studies, 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.

In addition, the clinical study requirements of the FDA, EMA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate are determined according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates, such as our novel T-cell product candidates and next-generation CAR T programs, can be more complex and consequently more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates. Approvals by the EMA and FDA for existing autologous CAR T therapies, such as Novartis's Kymriah® and Gilead's Yescarta®, may not be indicative of what these regulators may require for approval of our therapies. Moreover, our product candidates may not perform successfully in clinical studies or may be associated with adverse events that distinguish them from those that have previously been approved, such as existing autologous CAR T therapies. For instance, allogeneic product candidates may result in adverse events not experienced with autologous products.

Our development and commercialization activities could be harmed or delayed by governmental or regulatory delays due to limitations on the availability of governmental and regulatory agency personnel to review regulatory filings or engage with us, as a result of the COVID-19 pandemic, changes to governmental regulatory requirements, policies, guidelines or priorities, reallocation, or availability of government resources, or for other reasons, which may significantly delay the FDA's, or other regulatory agency, ability to review and process any submissions we have filed or may file or cause other regulatory delays.

Even if a product candidate were to successfully obtain approval from the FDA and comparable foreign regulatory authorities, any approval might contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, or may be subject to burdensome post-approval study or risk management requirements. If we are unable to obtain regulatory approval for one of our product candidates in one or more jurisdictions, or any approval contains significant limitations, we may not be able to obtain sufficient funding to continue the development of that product or generate revenues attributable to that product candidate. Also, any regulatory approval of our current or future product candidates, once obtained, may be withdrawn.

Our T-cell immunotherapy product candidates and our next-generation CAR T programs represent new therapeutic approaches that could result in heightened regulatory scrutiny, delays in clinical development or delays in or our inability to achieve regulatory approval, commercialization or payor coverage of our product candidates.

Our future success is dependent on the successful development of T-cell immunotherapies and our next-generation CAR T programs in general and our development product candidates in particular. Because these programs, particularly our pipeline of allogeneic T-cell product candidates that are bioengineered from donors, represent a new approach to immunotherapy for the treatment of cancer and other diseases, developing and commercializing our product candidates subject us to a number of challenges, including:

- obtaining regulatory approval from the FDA and other regulatory authorities, which have limited experience with regulating the development and commercialization of T-cell immunotherapies, particularly allogeneic T-cell product candidates;
- developing and deploying consistent and reliable processes for procuring blood from consenting third-party donors, isolating T cells from the blood of such donors, activating the isolated T cells against a specific antigen, characterizing and storing the resulting activated T cells for future therapeutic use, selecting and delivering a sufficient supply and breadth of appropriate partially HLA-matched cell line from among the available T-cell lines, and finally infusing these activated T cells into patients;

- utilizing these product candidates in combination with other therapies (e.g. immunomodulatory approaches such as checkpoint inhibitors), which may increase the risk of adverse side effects;
- educating medical personnel regarding the potential side effect profile of each of our product candidates, particularly those that may be unique to our allogeneic T-cell product candidates and to our next-generation CAR T programs;
- understanding and addressing variability in the quality of a donor's T cells, which could ultimately affect our ability to manufacture product in a reliable and consistent manner;
- developing processes for the safe administration of these products, including long-term follow-up and registries, for all patients who receive these product candidates;
- manufacturing our product candidates to our specifications and in a timely manner to support our clinical studies and, if approved, commercialization;
- sourcing clinical and, if approved by applicable regulatory authorities, commercial supplies for the materials used to manufacture and process these product candidates that are free from viruses and other pathogens that may increase the risk of adverse side effects;
- developing a manufacturing process and distribution network that can provide a stable supply with a cost of goods that allows for an attractive return on investment;
- establishing sales and marketing capabilities ahead of and after obtaining any regulatory approval to gain market acceptance, and obtaining adequate coverage, reimbursement and pricing by third-party payors and government authorities; and
- developing therapies for types of diseases beyond those initially addressed by our current product candidates.

We cannot be sure that the manufacturing processes used in connection with our T-cell immunotherapy product candidates will yield a sufficient supply of satisfactory products that are safe, pure, potent, comparable to those T cells produced by our partners historically, scalable or profitable.

Moreover, actual or perceived safety issues, including adoption of new therapeutics or novel approaches to treatment, may adversely influence the willingness of subjects to participate in clinical studies, or, if one of our product candidates is approved by applicable regulatory authorities, of physicians to subscribe to the novel treatment mechanics or of patients to provide consent to receive a novel treatment despite its regulatory approval. The FDA or other applicable regulatory authorities may require specific post-market studies or additional information that communicates the benefits or risks of our products. New data may reveal new risks of our product candidates at any time prior to or after regulatory approval.

Physicians, hospitals and third-party payors often are slow to adopt new products, technologies and treatment practices that require additional upfront costs and training. Physicians may not be willing to undergo training to adopt this novel therapy, may decide the therapy is too complex to adopt without appropriate training or not cost-efficient, and may choose not to administer the therapy. Based on these and other factors, hospitals and payors may decide that the benefits of this new therapy do not or will not outweigh its costs.

The results of preclinical studies or earlier clinical studies are not necessarily predictive of future results. Our existing product candidates in clinical studies, and any other product candidate we advance into clinical studies, may not have favorable results in later clinical studies or receive regulatory approval.

Success in preclinical studies and early clinical studies does not ensure that later clinical studies will generate adequate data to demonstrate the efficacy and safety of an investigational drug. Likewise, a number of companies in the pharmaceutical and biotechnology industries, including those with greater resources and experience than us, have suffered significant setbacks in clinical studies, even after seeing promising results in earlier preclinical studies or clinical studies. Despite the results reported in earlier preclinical studies or clinical studies for our product candidates, we do not know whether the clinical studies we may conduct, or clinical studies in progress, will demonstrate adequate efficacy and safety to result in regulatory approval to market tab-cel®, ATA188, any product candidates resulting from our next-generation CAR T programs or any of our other product candidates in any particular jurisdiction.

Tab-cel® has been predominantly evaluated in single-center studies under investigator-sponsored INDs held by MSK and in our EAP, utilizing different response criteria and endpoints from those we may utilize in later clinical studies. The findings may not be reproducible in late phase studies we conduct. For instance, the current protocol for our ALLELE study is designed to rule out a 20% ORR as the null hypothesis. This means that if the lower bound of the 95% confidence interval on ORR among patients receiving at least one dose of tab-cel® exceeds 20% at the end of the study, then the study would be expected to meet the primary endpoint for the treatment of PTLD. For example, assuming enrollment of 33 patients in a cohort of ALLELE, an observed ORR above approximately 37% would be expected to meet the primary endpoint for that cohort. In addition, our amended ALLELE study protocol includes an interim analysis as well as a final study analysis. Depending on discussions with regulators, we may, for example, file a marketing application on the basis of interim data from a subset of the required patients or file a marketing application on the basis of the final data. A marketing application based on interim data would impact the required ORR and may also result in post-marketing requirements that must be fulfilled. Similarly, if conditional marketing authorization is granted from the European Commission, we may be subject to ongoing obligations, including the need to provide additional clinical data at a later stage to confirm a positive benefit/risk balance.

For regulatory approvals of tab-cel®, we plan on using independent radiologist and/or oncologist assessment of responses which may not correlate with the investigator-reported assessments. In addition, the Phase 2 clinical studies with tab-cel® enrolled a heterogeneous group of patients with a variety of EBV-associated malignancies, including EBV+ PTLD after HCT and EBV+ PTLD after SOT. These Phase 2 studies were not prospectively designed to evaluate the efficacy oftab-cel® in the treatment of a single disease state for which we may later seek approval.

Moreover, final study results may not be consistent with interim study results. Efficacy data from prospectively designed studies may differ significantly from those obtained from retrospective subgroup analyses. In addition, clinical data obtained from a clinical study with an allogeneic product candidate may not yield the same or better results as compared to an autologous product candidate. If later-stage clinical studies do not produce favorable results, our ability to achieve regulatory approval for any of our product candidates may be adversely impacted. Even if we believe that we have adequate data to support an application for regulatory approval to market any of our product candidates, the FDA or other regulatory authorities may not agree and may require that we conduct additional clinical studies.

Interim "top line" and preliminary data from clinical studies that we or our partners may announce or share with regulatory authorities 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 or our partners may announce or share with regulatory authoritiesinterim "top line" or preliminary data from clinical studies. Interim data from completed clinical studies 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 previously announced. As a result, interim and preliminary data should be viewed with caution until the final data are available. Adverse differences between preliminary or interim data and final data could impact the regulatory approval of, and significantly harm the prospects of any product candidate that is impacted by the applicable data.

Clinical drug development involves a lengthy and expensive process with an uncertain outcome.

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical study process. Product candidates in later stages of clinical studies may fail to show the desired safety and efficacy traits despite having progressed through preclinical and clinical studies.

We may experience delays in our ongoing or future clinical studies and we do not know whether clinical studies will begin or enroll subjects on time, will need to be redesigned or will be completed on schedule, if at all. There can be no assurance that the FDA or comparable foreign regulatory authorities will not put clinical studies of any of our product candidates on clinical hold in the future. Clinical studies may be delayed, suspended or prematurely terminated for a variety of reasons, such as:

- delays in enrollment due to travel, shelter-in-place or quarantine policies, or other factors, related to the ongoing COVID-19 pandemic or other epidemics or pandemics;
- delay or failure in reaching agreement with the FDA or a comparable foreign regulatory authority on a study design that we are able to execute;
- delay or failure in obtaining authorization to commence a study or inability to comply with conditions imposed by a regulatory authority regarding the scope or design of a study;

- delay or failure in reaching agreement on acceptable terms with prospective contract research organizations(CROs) and clinical study sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and study sites;
- delay or failure in obtaining institutional review board (IRB) approval or the approval of other reviewing entities, including comparable foreign regulatory authorities, to conduct a clinical study at each site;
- withdrawal of clinical study sites from our clinical studies or the ineligibility of a site to participate in our clinical studies;
- delay or failure in recruiting and enrolling eligible subjects to participate in a study;
- delay or failure in subjects completing a study or returning for post-treatment follow-up;
- clinical sites and investigators deviating from study protocol, failing to conduct the study in accordance with regulatory requirements, or dropping out of a study;
- an FDA or other regulatory authority clinical site inspection reveals serious violations of regulations applicable to clinical investigations, which may result in requests for additional data analyses and/or rejection of data deemed unreliable;
- inability to identify and maintain a sufficient number of study sites, including because potential study sites may already be engaged in competing clinical study programs enrolling the same population;
- failure of our third-party clinical study managers to satisfy their contractual duties, meet expected deadlines or return trustworthy data;
- delay or failure in adding new study sites;
- interim results or data that are ambiguous or negative or are inconsistent with earlier results or data;
- feedback from the FDA, the IRB, data safety monitoring boards or comparable foreign authorities, or results from earlier stage or concurrent preclinical and clinical studies, that might require modification to the protocol for a study;
- a decision by the FDA, the IRB, comparable foreign authorities, or us, or a recommendation by a data safety monitoring board or comparable foreign authority, to suspend or terminate clinical studies at any time for safety issues or for any other reason;
- unacceptable benefit/risk profile, unforeseen safety issues or adverse side effects;
- failure to demonstrate a benefit from using a product candidate;
- difficulties in manufacturing or obtaining from third parties sufficient quantities and breadth of appropriate partially HLA matched cell lines from among the available T-cell lines to start or to use in clinical studies;
- lack of adequate funding to continue a study, including the incurrence of unforeseen costs due to enrollment delays, requirements to conduct additional studies or increased expenses associated with the services of our CROs and other third parties; or
- changes in governmental regulations or administrative actions or lack of adequate funding to continue a clinical study.

Patient enrollment, a significant factor in the timing of clinical studies, is affected by many factors including:

- the size and nature of the patient population;
- the possibility that the rare diseases that many of our product candidates address are under-diagnosed;
- changing medical practice patterns or guidelines related to the diseases or conditions we are investigating;
- the severity of the disease under investigation, our ability to open clinical study sites;
- the proximity of subjects to clinical sites;
- the patient referral practices of physicians;
- the design and eligibility criteria of the clinical study;
- ability to obtain and maintain patient consents;
- risk that enrolled subjects will drop out or die before completion;
- competition for patients from other clinical studies;

- our or our partner's ability to manufacture the requisite materials for a study;
- risk that we do not have appropriately matched HLA cell lines;
- clinicians' and patients' perceptions as to the potential advantages and risks of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the diseases or conditions we are investigating; and
- disruptions caused by man-made or natural disasters or public health pandemics or epidemics, including, for example, the ongoing COVID-19 pandemic.

As an example, we activated additional clinical sites over the course of 2018 and increased HLA coverage during this period. As a result, enrollment in our studies was limited in the early part of 2018 and increased through the course of the year as we increased clinical sites and HLA coverage. However, in May 2019, we announced that enrollment in our Phase 3 studies of tab-cel® for patients with EBV+ PTLD was proceeding slower than anticipated. Many of our product candidates are designed to treat rare diseases, and as a result, the pool of potential patients with respect to a given disease is small. We may not be able to initiate or continue to support clinical studies of tab-cel®, ATA188 or any other product candidates if we are unable to locate and enroll a sufficient number of eligible participants in these studies as required by the FDA or other regulatory authorities. We have experienced some transient delays in clinical trial site initiation and patient enrollment in certain of our clinical trials, including our Phase 3 clinical trial of tab-cel®, as a result of the evolving impact of the ongoing COVID-19 pandemic, and if the COVID-19 pandemic continues and persists for an extended period of time, we could experience significant disruptions to our clinical development timelines. Even if we are able to enroll a sufficient number of patients in our clinical studies, if the pace of enrollment is slower than we expect, the development costs for our product candidates may increase and the completion of our studies may be delayed or our studies could become too expensive to complete.

We rely on CROs, other vendors and clinical study sites to ensure the proper and timely conduct of our clinical studies, and while we have agreements governing their committed activities, we have limited influence over their actual performance.

If we experience delays or quality issues in the conduct, completion or termination of any clinical study of our product candidates, the approval and commercial prospects of such product candidate will be harmed, and our ability to generate product revenues from such product candidate will be delayed. In addition, any delays in completing our clinical studies will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Any delays in completing our clinical studies for our product candidates may also decrease the period of commercial exclusivity. In addition, many of the factors that could cause a delay in the commencement or completion of clinical studies may also ultimately lead to the denial of regulatory approval of our product candidates.

Our product candidates, the methods used to deliver them or their dosage levels may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label or result in significant negative consequences following any regulatory approval.

Undesirable side effects caused by our product candidates, their delivery methods or dosage levels could cause us or regulatory authorities to interrupt, delay or halt clinical studies and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authority. As a result of safety or toxicity issues that we may experience in our clinical studies, we may not receive approval to market any product candidates, which could prevent us from ever generating revenues or achieving profitability. Results of our studies could reveal an unacceptably high severity and incidence of side effects, or risks that outweigh the benefits of our product candidates. In such an event, our studies 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 drug-related side effects could affect patient recruitment or the ability of enrolled subjects to complete the study or result in potential product liability claims.

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

- we may be forced to suspend marketing of that product;
- regulatory authorities may withdraw or change their approvals of that product;
- regulatory authorities may require additional warnings on the label or limit access of that product to selective specialized centers with additional safety reporting and with requirements that patients be geographically close to these centers for all or part of their treatment;
- we may be required to conduct post-marketing studies;

- we may be required to change the way the product is administered;
- we could be sued and held liable for harm caused to subjects or patients; and
- our reputation may suffer.

Any of these events could diminish the usage or otherwise limit the commercial success of our product candidates and prevent us from achieving or maintaining market acceptance of the affected product candidate, if approved by applicable regulatory authorities.

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.

The FDA often approves new cancer therapies initially only for use in patients with relapsed or refractory metastatic disease. We expect to initially seek approval of tab-cel® and our other product candidates in this setting. Subsequently, for those products that prove to be sufficiently beneficial, if any, we would expect to seek approval in earlier lines of treatment and potentially as a first line therapy, but there is no guarantee that our product candidates, even if approved, would be approved for earlier lines of therapy, and, prior to any such approvals, we will have to conduct additional clinical trials.

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 second or later lines of therapy, and who have the potential to benefit from treatment with our product candidates, are based on our current beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or our own market research, and may prove to be incorrect, including if the COVID-19 pandemic and associated responses impact our ability to engage with key stakeholders within the transplant center in person. Further, new studies or market research may change the estimated incidence or prevalence of these diseases, and 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 lead product candidate, tab-cel®, to initially target a small patient population that suffers from aggressive EBV+PTLD who have failed rituximab or rituximab plus chemotherapy. At the outset of the COVID-19 pandemic, we initially observed a temporary slow-down in stem cell and solid organ transplant volumes. These reductions were transient, but if a reduction in such volumes resumes, it could result in lower PTLD incidence and thus reduce the demand for tab-cel®. Even if we obtain significant market share for our product candidates, because the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications.

We may not be able to obtain or maintain orphan drug exclusivity for our product candidates.

Regulatory authorities in some jurisdictions, including the U.S. and Europe, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the U.S. Both the FDA and the EMA have granted us orphan designation for tab-cel® for EBV+ PTLD after HCT or SOT.

Generally, if a product with an orphan drug designation subsequently receives the first regulatory approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the EMA or the FDA from approving another marketing application for the same drug for that time period. The applicable period is seven years in the U.S. and ten years in Europe. The European exclusivity period can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA or EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product, that exclusivity may not be maintained or effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve a new drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

BTD by the FDA and PRIME designation by the EMA may not lead to a faster development or regulatory review or approval process and it does not increase the likelihood that our product candidates will receive marketing approval.

Although we have obtained BTD and PRIME designation for tab-cel® for EBV+ PTLD in the U.S. and the EU, respectively, this may not lead to faster development or regulatory review and does not increase our likelihood of success. A breakthrough therapy is defined as a drug or biologic that is intended, alone or in combination with one or more other drugs or biologics, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the drug, or biologic in our case, 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 product candidates that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the study can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Biologics designated as breakthrough therapies by the FDA may also be eligible for priority review. Based on our BTD, we intend to pursue a rolling submission strategy for our BLA for tab-cel® for EBV+ PTLD in the U.S. While the rolling review process may provide the opportunity for ongoing communications with and feedback from the FDA, the FDA may raise issues and pose questions to us that may delay the initiation and completion of our BLA submission, acceptance of the complete BLA for filing, and approval of the BLA, thereby potentially delaying the approval process. We may not be able to provide a satisfactory or a timely response to FDA questions or we may not be able to timely gather the required data to prepare our BLA submissions as we plan. If we are unable to address all questions or concerns the FDA may raise or if we do not have timely access to the data required for the preparation of the BLA, we may not be able to timely initiate and complete our BLA and ultimately receive FDA approval. In addition, the FDA retains discretion to decide not to review the portions of our BLA submitted under the rolling review process until the submission is deemed to be complete.

PRIME designation supports the development and accelerated review by the EMA of new therapies to treat patients with unmet medical need.

Designation as a breakthrough therapy is within the discretion of the FDA, and access to PRIME is at the discretion of the EMA. Receipt of a BTD or PRIME designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under non-expedited FDA or EMA review procedures, respectively, and does not assure ultimate approval by the FDA or EMA, respectively. In addition, the FDA or EMA, respectively, may later decide that the product no longer meets the conditions for qualification and rescind the BTD or PRIME designation or decide that the time period for FDA or EMA, respectively, review or approval will not be shortened.

Failure to obtain regulatory approval in international jurisdictions would prevent our product candidates from being marketed abroad.

In addition to regulations in the U.S., to market and sell our products in the European Union, many Asian countries and other jurisdictions, we must obtain separate regulatory approvals and comply with numerous and varying regulatory requirements, both from a clinical and manufacturing perspective. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The regulatory approval process outside the U.S. generally includes all of the risks associated with obtaining FDA approval. Clinical studies accepted in one country may not be accepted by regulatory authorities in other countries. In addition, many countries outside the U.S. require that a product be approved for reimbursement before it can be approved for sale in that country. A product candidate that has been approved for sale in a particular country may not receive reimbursement approval in that country. We may not be able to obtain approvals from regulatory authorities or payor authorities outside the U.S. on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory or payor authorities in other countries or jurisdictions, and approval by one regulatory or payor authority outside the U.S. does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. We may not be able to file for regulatory approvals and may not receive necessary approvals to commercialize our products in any market. If we are unable to obtain approval of any of our product candidates by regulatory or payor authorities in the European Union, Asia or elsewhere, the commercial prospects of that product candidate may be significantly diminished.

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

Even if we obtain regulatory approval for a product candidate, it would be subject to ongoing requirements by the FDA and comparable foreign regulatory authorities governing the manufacture, quality control, further development, labeling, packaging, storage, distribution, adverse event reporting, safety surveillance, import, export, advertising, promotion, recordkeeping and reporting of safety and other post-marketing information. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance by us and/or our contract manufacturing organizations (CMOs) and CROs for any post-approval clinical studies that we conduct. The safety profile of any product will continue to be closely monitored by the FDA and comparable foreign regulatory authorities after approval. If the FDA or comparable foreign regulatory authorities become aware of new safety information after approval of any of our product candidates, they may require labeling changes or establishment of a risk evaluation and mitigation strategy, impose significant restrictions on a product's indicated uses or marketing or impose ongoing requirements for potentially costly post-approval studies or post-market surveillance.

In addition, manufacturers of drug products and their facilities are subject to initial and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with current good manufacturing practices (cGMP), current Good Clinical Practices (GCP), current good tissue practices (cGTP) and other regulations. If we or a regulatory agency discover previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, a regulatory agency may impose restrictions on that product, the manufacturing facility or us, including requiring recall or withdrawal of the product from the market or suspension of manufacturing. If we, our product candidates, or the manufacturing facilities for our product candidates fail to comply with applicable regulatory requirements, a regulatory agency may:

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

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

Advertising and promotion of any product candidate that obtains approval in the U.S. will be heavily scrutinized by the FDA, the Department of Justice (the DOJ), the Office of Inspector General of the Department of Health and Human Services (HHS), state attorneys general, members of the U.S. Congress and the public. Additionally, advertising and promotion of any product candidate that obtains approval outside of the U.S. will be heavily scrutinized by comparable foreign entities and stakeholders. For example, a company may not promote "off-label" uses for its drug products. An off-label use is the use of a product for an indication that is not described in the product's FDA-approved label in the U.S. or for uses in other jurisdictions that differ from those approved by the applicable regulatory agencies. Physicians, on the other hand, may prescribe products for off-label uses. Although the FDA and other regulatory agencies do not regulate a physician's choice of drug treatment made in the physician's independent medical judgment, they do restrict promotional communications from companies or their sales force with respect to off-label uses of products for which marketing clearance has not been issued. However, companies may share truthful and not misleading information that is otherwise consistent with a product's FDA approved labeling. Violations, including actual or alleged promotion of our products for unapproved or off-label uses, are subject to enforcement letters, inquiries and investigations, and civil and criminal sanctions by the FDA or comparable foreign bodies. Any actual or alleged failure to comply with labeling and promotion requirements may result in fines, warning letters, mandates to corrective information to healthcare practitioners, injunctions, or civil or criminal penalties.

Regulations, guidelines and recommendations published by various government agencies and organizations may affect the use of our product candidates.

Changes to regulations, recommendations or other guidelines advocating alternative therapies for the indications we treat could result in decreased use of our products. For example, although treatment with EBV-specific T cells is recognized as a recommended treatment for persistent or progressive EBV+ PTLD as set forth in the 2017 National Comprehensive Cancer Network Guidelines, future guidelines from governmental agencies, professional societies, practice management groups, private health/science foundations and other organizations could lead to decreased ability of developing our product candidates, or decreased use of our products once approved by applicable regulatory authorities.

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

Part of our business strategy is to expand our product candidate pipeline by identifying and validating new product candidates, which we may develop ourselves, in-license or otherwise acquire from others. In addition, in the event that our existing product candidates do not receive regulatory approval or are not successfully commercialized, then the success of our business will depend on our ability to expand our product pipeline through in-licensing or other acquisitions. We may be unable to identify relevant product candidates. If we do identify such product candidates, we may be unable to reach acceptable terms with any third party from which we desire to in-license or acquire them.

We may not realize the benefits of strategic alliances that we may form in the future or of potential future product acquisitions or licenses.

We may desire to form strategic alliances, create joint ventures or collaborations, enter into licensing arrangements with third parties or acquire products or business, in each case that we believe will complement or augment our existing business. These relationships or transactions, or those like them, may require us to incur nonrecurring and other charges, increase our near- and long-term expenditures, issue securities that dilute our existing stockholders, reduce the potential profitability of the products that are the subject of the relationship or disrupt our management and business. In addition, we face significant competition in seeking appropriate strategic alliances and transactions and the negotiation process is time-consuming and complex and there can be no assurance that we can enter into any of these transactions even if we desire to do so. Moreover, we may not be successful in our efforts to establish a strategic alliance or other alternative arrangements for any future product candidates and programs because our research and development pipeline may be insufficient, our product candidates and programs may be deemed to be at too early a stage of development for collaborative effort and third parties may not view our product candidates and programs as having the requisite potential to demonstrate a positive benefit/risk profile. Any delays in entering into new strategic alliances agreements related to our product candidates could also delay the development and commercialization of our product candidates and reduce their competitiveness even if they reach the market.

If we license products or acquire businesses, we may not be able to realize the benefit of these transactions if we are unable to successfully integrate them with our existing operations and company culture. We cannot be certain that, following an acquisition or license, we will achieve the financial or strategic results that would justify the transaction.

Risks Related to Manufacturing

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

Concurrently with the license of our existing product candidates, we acquired manufacturing process know-how and, in some cases, inventory of process intermediates and clinical materials from our partners. Transferring manufacturing processes, testing and associated know-how is complex and involves review and incorporation of both documented and undocumented processes that may have evolved over time. In addition, transferring production to different facilities may require utilization of new or different processes to meet the specific requirements of a given facility. Each stage is retroactively and concurrently verified to be compliant with appropriate regulations. As a result, there is a risk that all relevant know-how was not adequately transferred to us from our partners or that previous execution was not compliant with applicable regulations.

In addition, we need to conduct significant development and scale-up work to transfer these processes and manufacture each of our product candidates for various studies, clinical studies and commercial launch readiness. To the extent we elect to transfer manufacturing within our network, we are required to demonstrate that the product manufactured in the new or “receiving” facility is comparable to the product manufactured in the original or “sending” facility. The inability to demonstrate to each of the applicable regulatory authorities that comparable drug product was manufactured could delay the development of our product candidates.

The processes by which our product candidates are manufactured were initially developed by our partners for clinical purposes. We intend to evolve the existing processes with our partners to support advanced clinical studies and commercialization requirements. Developing commercially viable manufacturing processes is a difficult and uncertain task, and there are risks associated with scaling to the level required for advanced clinical studies or commercialization, including cost overruns, potential problems with process scale-up, process reproducibility, stability issues, consistency and timely availability of reagents or raw materials. The manufacturing facilities in which our product candidates will be made could be adversely affected by the ongoing COVID-19 pandemic, earthquakes and other natural or man-made disasters, equipment failures, labor shortages, power failures, and numerous other factors. In addition, there have been, and there may continue to be, interruptions in the supply of leukapheresis collections related to the COVID-19 pandemic, which supply raw materials used in our product candidates. If we are unable to obtain such raw materials or other necessary raw materials in a timely manner, our business operations and manufacturing capabilities could be adversely affected.

The process of manufacturing cellular therapies is susceptible to product loss due to contamination, equipment failure or improper installation or operation of equipment, or vendor or operator error. Even minor deviations from normal manufacturing and distribution processes for any of our product candidates could result in reduced production yields, impact to key product quality attributes, and other supply disruptions. Product defects can also occur unexpectedly. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, these manufacturing facilities may need to be closed for an extended period of time to allow us to investigate and remedy the contamination. Because our T-cell immunotherapy product candidates are manufactured from the blood of third-party donors, the process of manufacturing is susceptible to the availability of the third-party donor material. The process of developing products that can be commercialized may be particularly challenging, even if they otherwise prove to be safe and effective. The manufacture of these product candidates involves complex processes. Some of these processes require specialized equipment and highly skilled and trained personnel. The process of manufacturing these product candidates will be susceptible to additional risks, given the need to maintain aseptic conditions throughout the manufacturing process. Contamination with viruses or other pathogens in either the donor material or materials utilized in the manufacturing process or ingress of microbiological material at any point in the process may result in contaminated or unusable product. This type of contaminations could result in delays in the manufacture of products which could result in delays in the development of our product candidates. These contaminations could also increase the risk of adverse side effects. Furthermore, our allogeneic products ultimately consist of many individual cell lines, each with a different HLA profile. As a result, the selection and distribution of the appropriate cell line for therapeutic use in a patient requires close coordination between clinical operations, supply chain and quality assurance personnel.

Any adverse developments affecting manufacturing operations for our product candidates may result in lot failures, inventory shortages, shipment delays, product withdrawals or recalls or other interruptions in the supply of our drug product which could delay the development of our product candidates. We may also have to write off inventory, incur other charges and expenses for supply of drug product that fails to meet specifications, undertake costly remediation efforts, or seek more costly manufacturing alternatives. Inability to meet the demand for our product candidates could damage our reputation and the reputation of our products among physicians, healthcare payors, patients or the medical community that supports our product development efforts, including hospitals and outpatient clinics.

We intend to manufacture a majority of our product candidates ourselves. Delays in receiving regulatory approvals for product candidates produced in our manufacturing facility could delay our development plans and thereby limit our ability to generate revenues.

The research and development and process and analytical development labs within our manufacturing facility in Thousand Oaks, California are currently supporting preclinical development activities. The facility commissioning and qualification activities required to support production at our facility were completed in 2018. Product-specific qualification to support clinical development is complete and commercial production qualification activities are ongoing. If the appropriate regulatory approvals for manufacturing product candidates in our facility are delayed, we may not be able to manufacture sufficient quantities of our product candidates, which would limit our development activities and our opportunities for growth.

In addition to the similar manufacturing risks described in "Risks Related to Our Dependence on Third Parties," our manufacturing facility will be subject to ongoing, periodic inspection by the FDA, EMA or other comparable regulatory agencies to ensure compliance with cGMP and GTP. Our failure to follow and document our adherence to these regulations or other regulatory requirements may lead to significant delays in the availability of products for clinical or, in the future, commercial use, may result in the termination of or a hold on a clinical study, or may delay or prevent filing or approval of commercial marketing applications for our product candidates. We also may encounter problems with the following:

- achieving adequate or clinical-grade materials that meet regulatory agency standards or specifications with consistent and acceptable production yield and costs;
- shortages of qualified personnel, raw materials or key contractors; and
- ongoing compliance with cGMP regulations and other requirements of the FDA, EMA or other comparable regulatory agencies.

Failure to comply with applicable regulations could also result in sanctions being imposed on us, including fines, injunctions, civil penalties, a requirement to suspend or put on hold one or more of our clinical studies, failure of regulatory authorities to grant marketing approval of our product candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates, operating restrictions and criminal prosecutions, any of which could harm our business.

Developing advanced manufacturing techniques and process controls is required to fully utilize our facility. Without further investment, advances in manufacturing techniques may render our facility and equipment inadequate or obsolete.

A number of the product candidates in our portfolio, if approvedby applicable regulatory authorities, may require significant commercial supply to meet market demand. In these cases, we may need to increase, or "scale up," the production process by a significant factor over the initial level of production. If we are unable to do so, are delayed, or if the cost of this scale up is not economically feasible for us or we cannot find a third-party supplier, we may not be able to produce our product candidates in a sufficient quantity to meet future demand.

If our sole clinical or commercial manufacturing facility or our CMO is damaged or destroyed or production at these facilities is otherwise interrupted, our business would be negatively affected.

If any manufacturing facility in our manufacturing network, or the equipment in these facilities, is either damaged or destroyed, we may not be able to quickly or inexpensively replace our manufacturing capacity or replace it at all. In the event of a temporary or protracted loss of a facility or its equipment, we may not be able to transfer manufacturing to a third party in the time required to maintain supply. Even if we could transfer manufacturing to a third party, the shift would likely be expensive and time-consuming, particularly since the new facility would need to comply with the necessary regulatory requirements or may require regulatory approval before selling any products manufactured at that facility. Such an event could delay our clinical studies or reduce our commercial product sales.

Currently, we maintain insurance coverage against damage to our property and to cover business interruption and research and development restoration expenses. However, our insurance coverage may not reimburse us, or may not be sufficient to reimburse us, for any expenses or losses we may suffer. We may be unable to meet our requirements for our product candidates if there were a catastrophic event or failure of our current manufacturing facility or processes.

Risks Related to Our Dependence on Third Parties

Maintaining clinical and commercial timelines is dependent on our end-to-end supply chain network to support manufacturing; if we experience problems with our third party suppliers we may delay development and/or commercialization of our product candidates.

We rely in part on our CMOs or our partners for the current production of our product candidates and the acquisition of materials incorporated in or used in the manufacturing or testing of our product candidates. Our CMOs or partners are not our employees, and except for remedies available to us under our agreements with our CMOs or partners, we cannot directly control whether or not they devote sufficient time and resources, including experienced staff, to the manufacturing of supply for our ongoing clinical, nonclinical and preclinical programs.

To meet our projected supply needs for clinical and commercial materials to support our activities through regulatory approval and commercial manufacturing of tab-cel®, ATA188, any product candidates resulting from our next-generation CAR T programs or any other product candidates, we will need to transition the manufacturing of these materials to a CMO or our own facility. Regardless of where production occurs, we will need to develop relationships with suppliers of critical starting materials or reagents, increase the scale of production and demonstrate comparability of the material produced at these facilities to the material that was previously produced. Transferring manufacturing processes and know-how is complex and involves review and incorporation of both documented and undocumented processes that may have evolved over time.

In addition, transferring production to different facilities may require utilization of new or different processes to meet the specific requirements of a given facility. We would expect additional comparability work will also need to be conducted to support the transfer of certain manufacturing processes and process improvements. We cannot be certain that all relevant know-how and data has been adequately incorporated into the manufacturing process until the completion of studies (and the related evaluations) intended to demonstrate the comparability of material previously produced with that generated by our CMO.

If we are not able to successfully transfer and produce comparable product candidates, our ability to further develop and manufacture our product candidates may be negatively impacted.

While our manufacturing facility in Thousand Oaks, California provides us with flexibility within our manufacturing network, we still may need to identify additional CMOs for continued production of supply for some of our product candidates. Given the nature of our manufacturing processes, the number of CMOs who possess the requisite skill and capability to manufacture our T-cell immunotherapy product candidates is limited. We have not yet identified alternate suppliers in the event the current CMOs that we utilize are unable to scale production, or if we otherwise experience any problems with them.

Manufacturing cellular therapies is complicated and tightly regulated by the FDA and comparable regulatory authorities around the world, and although alternative third-party suppliers with the necessary manufacturing and regulatory expertise and facilities exist, it could be expensive and take a significant amount of time to arrange for alternative suppliers, transfer manufacturing procedures to these alternative suppliers, and demonstrate comparability of material produced by such new suppliers. New manufacturers of any product candidate or intermediate would be required to qualify under applicable regulatory requirements. These manufacturers may not be able to manufacture our product candidates at costs, or in sufficient quantities, or in a timely manner necessary to complete development of our product candidates or make commercially successful products. If we are unable to arrange for alternative third-party manufacturing sources, or to do so on commercially reasonable terms or in a timely manner, we may not be able to complete development of our product candidates, or market or distribute them. In addition, should the FDA or comparable regulatory authorities not agree with our product candidate specifications and comparability assessments for these materials, further clinical development of our product candidate could be substantially delayed and we would incur substantial additional expenses.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured product candidates ourselves, including reliance on the third party for regulatory compliance and quality assurance, the possibility that the third-party manufacturer does not maintain the financial resources to meet its obligations under the manufacturing agreement, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control, including a failure to manufacture our product candidates or any products we may eventually commercialize in accordance with our specifications, misappropriation of our proprietary information, including our trade secrets and know-how, and the possibility of termination or nonrenewal of the agreement by the third party, based on its own business priorities, at a time that is costly or damaging to us. In addition, the FDA and other regulatory authorities require that our product candidates and any products that we may eventually commercialize be manufactured according to cGMP, cGTP and similar regulatory jurisdictional standards. These requirements include, among other things, quality control, quality assurance and the maintenance of records and documentation. The FDA or similar foreign regulatory agencies may also implement new standards at any time or change their interpretations and enforcement of existing standards for manufacture, packaging or testing of products. We have limited control over our manufacturers' compliance with these regulations and standards and although we monitor our manufacturers, we depend on them to provide honest and accurate information. Any failure by our third-party manufacturers to comply with cGMP or cGTP or failure to scale up manufacturing processes, including any failure to deliver sufficient quantities of product candidates in a timely manner, could lead to a delay in, or failure to obtain, regulatory approval of any of our product candidates. In addition, such failure could be the basis for the FDA to issue a warning letter, withdraw approvals for product candidates previously granted to us, or take other regulatory or legal action, including recall or seizure of outside supplies of the product candidate, total or partial suspension of production, suspension of ongoing clinical studies, refusal to approve pending applications or supplemental applications, detention or product, refusal to permit the import or export of products, injunction or imposing civil and criminal penalties.

We depend on third party suppliers for key materials used to produce our product candidates. Any significant disruption in our supplier relationships could harm our business. Any significant delay in the supply of a product candidate for an ongoing clinical study could considerably delay initiation or completion of our clinical studies, product testing and potential regulatory approval of our product candidates. If raw materials or components cannot be purchased or fail to meet approved specifications, the commercial launch of our product candidates could be delayed, or there could be a shortage in supply, which could impair our ability to generate revenues from the sale of our product candidates.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain sufficient intellectual property protection for our product candidates, or if the scope of the intellectual property protection is not sufficiently broad, our ability to commercialize our product candidates successfully and to compete effectively may be adversely affected.

We rely upon a combination of patents, trademarks, trade secrets and confidentiality agreements – both that we own or possess or that are owned or possessed by our partners that are in-licensed to us – to protect the intellectual property related to our technology and product candidates. When we refer to "our" technologies, inventions, patents, patent applications or other intellectual property rights, we are referring to both the rights that we own or possess as well as those that we in-license, many of which are critical to our intellectual property protection and our business. For example, the product candidates and platform technology we have licensed from our partners are protected primarily by patent or patent applications of our partners that we have licensed and as confidential know-how and trade secrets. If the intellectual property that we rely on is not adequately protected, competitors may be able to use our technologies and erode or negate any competitive advantage we may have.

The patentability of inventions and the validity, enforceability and scope of patents in the biotechnology field is uncertain because it involves complex legal, scientific and factual considerations, and it has in recent years been the subject of significant litigation. Moreover, the standards applied by the U.S. Patent and Trademark Office (USPTO) and non-U.S. patent offices in granting patents are not always applied uniformly or predictably. For example, there is no uniform worldwide policy regarding patentable subject matter or the scope of claims allowable in biotechnology patents.

There is no assurance that all potentially relevant prior art relating to our patents and patent applications is known to us or has been found in the instances where searching was done. We may be unaware of prior art that could be used to invalidate an issued patent or prevent a pending patent application from issuing as a patent. There also may be prior art of which we are aware, but which we do not believe affects the validity or enforceability of a claim of one of our patents or patent applications, which may, nonetheless, ultimately be found to affect the validity or enforceability of such claim. As a consequence of these and other factors, our patent applications may fail to result in issued patents with claims that cover our product candidates in the U.S. or in other countries.

Even if patents have issued or do successfully issue from patent applications, and even if these patents cover our product candidates, third parties may challenge the validity, enforceability or scope thereof, which may result in these patents being narrowed, invalidated or held to be unenforceable. No assurance can be given that if challenged, our patents would be declared by a court to be valid or enforceable.

Even if unchallenged, our patents and patent applications or other intellectual property rights may not adequately protect our intellectual property, provide exclusivity for our product candidates or prevent others from designing around our claims. The possibility exists that others will develop products on an independent basis which have the same effect as our product candidates and which do not infringe our patents or other intellectual property rights, or that others will design around the claims of patents that we have had issued that cover our product candidates. If the breadth or strength of protection provided by our patents and patent applications with respect to our product candidates is threatened, it could jeopardize our ability to commercialize our product candidates and dissuade companies from collaborating with us.

We may also desire to seek a license from a third party who owns intellectual property that may be useful for providing exclusivity for our product candidates, or for providing the ability to develop and commercialize a product candidate in an unrestricted manner. There is no guarantee that we will be able to obtain a license from such a third party on commercially reasonable terms, or at all.

In addition, the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, 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.

We and our partners have filed a number of patent applications covering our product candidates or methods of using or making those product candidates. We cannot offer any assurances about which, if any, patents will be issued with respect to these pending patent applications, the breadth of any such patents that are ultimately issued or whether any issued patents will be found invalid and unenforceable or will be threatened by third parties. Because patent applications in the U.S. and most other countries are confidential for a period of time after filing, and some remain so until issued, we cannot be certain that we or our partners were the first to file any patent application related to a product candidate. We or our partners may also become involved in proceedings regarding our patents, including patent infringement lawsuits, interference or derivation proceedings, oppositions, and *inter partes* and post-grant review proceedings before the USPTO the European Patent Office and other non-U.S. patent offices.

Even if granted, patents have a limited lifespan. In the U.S., the natural expiration of a patent generally occurs 20 years after it is filed. Although various extensions may be available if certain conditions are met, the life of a patent and the protection it affords is limited. If we encounter delays in our clinical studies or in obtaining regulatory approvals, the period of time during which we could exclusively market any of our product candidates under patent protection, if approved, could be reduced. Even if patents covering our product candidates are obtained, once the patent life has expired for a product, we may be vulnerable to competition from biosimilar products, as we may be unable to prevent competitors from entering the market with a product that is similar or identical to our product candidates.

Furthermore, the research resulting in certain of our licensed patent rights and technology was funded by the U.S. government. As a result, the government has certain rights to these patent rights and technology. When new technologies are developed with government funding, the government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to practice the invention for or on behalf of the U.S. These rights may permit the government to disclose confidential information on which we rely to third parties and to exercise march-in rights to use or allow third parties to use our licensed technology. The government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations or to give preference to U.S. industry. In addition, our rights in any inventions that result from government-funded research may be subject to certain requirements to manufacture products embodying these inventions in the U.S.

If we are sued for infringing the intellectual property rights of third parties, the resulting litigation could be costly and time-consuming and could prevent or delay our development and commercialization efforts.

Our commercial success depends, in part, on us and our partners not infringing the patents and proprietary rights of third parties. There is a substantial amount of litigation and other adversarial proceedings, both within and outside the U.S., involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interference or derivation proceedings, oppositions, and *inter partes* and post-grant review proceedings before the USPTO and non-U.S. patent offices. Numerous U.S. and non-U.S. issued patents and pending patent applications owned by third parties exist in the fields in which we are developing and may develop our product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of third parties' patent rights, as 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.

Third parties may assert infringement claims against us based on existing or future intellectual property rights, alleging that we are employing their proprietary technology without authorization. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacturing of our product candidates that we failed to identify. For example, patent applications covering our product candidates could have been filed by others without our knowledge, since these applications generally remain confidential for some period of time after their filing date. Even pending patent applications that have been published, including some of which we are aware, could be later amended in a manner that could cover our product candidates or their use or manufacture. In addition, we may have analyzed patents or patent applications of third parties that we believe are relevant to our activities and believe that we are free to operate in relation to any of our product candidates, but our competitors may obtain issued claims, including in patents we consider to be unrelated, which may block our efforts or potentially result in any of our product candidates or our activities infringing their claims.

If we or our partners are sued for patent infringement, we would need to demonstrate that our product candidates, products and 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 that a patent is invalid is difficult and even if we are successful in the relevant proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be diverted from other activities. If any issued third-party patents were held by a court of competent jurisdiction to cover aspects of our materials, formulations, methods of manufacture or methods for treatment, we could be forced, including by court order, to cease developing, manufacturing or commercializing the relevant product candidate until the relevant patent expired. Alternatively, we may desire or be required to obtain a license from such third party in order to use the infringing technology and to continue developing, manufacturing or marketing the infringing product candidate. However, we may not be able to obtain any required license on commercially reasonably terms, or at all. Even if we were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property licensed to us.

We may face claims that we misappropriated the confidential information or trade secrets of a third party. If we are found to have misappropriated a third party's trade secrets, we may be prevented from further using these trade secrets, which could limit our ability to develop our product candidates.

Defending against intellectual property claims could be costly and time consuming, regardless of the outcome. Thus, even if we were to ultimately prevail, or to settle before a final judgment, any litigation could burden us with substantial unanticipated costs. In addition, litigation or threatened litigation could result in significant demands on the time and attention of our management team, distracting them from the pursuit of other company business. During the course of any intellectual property litigation, there could be public announcements of the results of hearings, rulings on motions, and other interim proceedings in the litigation and these announcements may have negative impact on the perceived value of our product candidates, programs or intellectual property. In the event of a successful intellectual property claim against us, we may have to pay substantial damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent, or to redesign our infringing product candidates, which may be impossible or require substantial time and monetary expenditure. In addition to paying monetary damages, we may lose valuable intellectual property rights or personnel and the parties making claims against us may obtain injunctive or other equitable relief, which could impose limitations on the conduct of our business. We may also elect to enter into license agreements in order to settle patent infringement claims prior to litigation, and any of these license agreements may require us to pay royalties and other fees that could be significant. As a result of all of the foregoing, any actual or threatened intellectual property claim could prevent us from developing or commercializing a product candidate or force us to cease some aspect of our business operations.

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

Filing, prosecuting, enforcing and defending patents on all of our product candidates in all countries throughout the world would be prohibitively expensive. Our intellectual property rights in certain countries outside the U.S. may be less extensive than those in the U.S. In addition, the laws of certain foreign countries do not protect intellectual property rights to the same extent as laws in the U.S. Consequently, we and our partners may not be able to prevent third parties from practicing our inventions in countries outside the U.S., or from selling or importing infringing products made using our inventions in and into the U.S. or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection or where we do not have exclusive rights under the relevant patents to develop their own products and, further, may export otherwise-infringing products to territories where we and our partners have patent protection but where enforcement is not as strong as that in the U.S. These infringing products may compete with our product candidates in jurisdictions where we or our partners have no issued patents or where we do not have exclusive rights under the relevant patents, or our patent claims and other intellectual property rights may not be effective or sufficient to prevent them from so 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 and our partners to stop the infringement of our patents or marketing of competing products in violation of our intellectual property rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims against us or our partners. We or our partners may not prevail in any lawsuits that we or our licensors initiate, and even if we or our licensors are successful the damages or other remedies awarded, if any, may not be commercially meaningful.

We have in-licensed a significant portion of our intellectual property from our partners. If we breach any of our license agreements with these partners, we could lose the ability to continue the development and potential commercialization of one or more of our product candidates.

We hold rights under license agreements with our partners, including MSK, QIMR Berghofer and Moffitt that are important to our business. Our discovery and development platform is built, in part, around patent rights in-licensed from our partners. Under our existing license agreements, we are subject to various obligations, including diligence obligations with respect to development and commercialization activities, payment obligations upon achievement of certain milestones and royalties on product sales. If there is any conflict, dispute, disagreement or issue of nonperformance between us and our counterparties regarding our rights or obligations under these license agreements, including any conflict, dispute or disagreement arising from our failure to satisfy diligence or payment obligations, we may be liable to pay damages and our counterparties may have a right to terminate the affected license. The termination of any license agreement with one of our partners would materially adversely affect our ability to utilize the intellectual property that is subject to that license agreement in our drug discovery and development efforts, our ability to enter into future collaboration, licensing and/or marketing agreements for one or more affected product candidates and our ability to commercialize the affected product candidates. Furthermore, a disagreement under any of these license agreements may harm our relationship with the partner, which could have negative impacts on other aspects of our business.

We may become involved in lawsuits to protect or enforce our intellectual property, which could be expensive, time-consuming and unsuccessful and have a material adverse effect on the success of our business.

Third parties may infringe our patents or misappropriate or otherwise violate our intellectual property rights. Our patent applications cannot be enforced against third parties practicing the technology claimed in these applications unless and until a patent issues from the applications, and then only to the extent the issued claims cover the technology. In the future, we or our partners may elect to initiate legal proceedings to enforce or defend our or our partners' intellectual property rights, to protect our or our partners' trade secrets or to determine the validity or scope of our intellectual property rights. Any claims that we or our partners assert against perceived infringers could also provoke these parties to assert counterclaims against us or our partners alleging that we or our partners infringe their intellectual property rights or that our intellectual property rights are invalid.

Interference or derivation proceedings provoked by third parties, brought by us or our partners, or brought by the USPTO or any non-U.S. patent authority may be necessary to determine the priority of inventions or matters of inventorship with respect to our patents or patent applications. We or our partners may also become involved in other proceedings, such as reexamination or opposition proceedings, *inter partes* review, post-grant review or other pre-issuance or post-grant proceedings in the USPTO or its foreign counterparts relating to our intellectual property or the intellectual property of others. An unfavorable outcome in any of these proceedings could require us or our partners to cease using the related technology and commercializing our product candidates, or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our partners a license on commercially reasonable terms if any license is offered at all. Even if we or our licensors obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Any intellectual property proceedings can be expensive and time-consuming. Our or our partners' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our partners can. Accordingly, despite our or our partners' efforts, we or our partners may not be able to prevent third parties from infringing upon or misappropriating our intellectual property rights, particularly in countries where the laws may not protect our rights as fully as in the U.S. Even if we are successful in the relevant proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be diverted from other activities. We could be found liable for monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent. In addition, in an infringement proceeding, a court may decide that one or more of our patents is invalid or unenforceable, in whole or in part, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation proceeding could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments.

If we are unable to protect the confidentiality of our trade secrets and other proprietary information, the value of our technology could be materially adversely affected and our business could be harmed.

In addition to seeking the protection afforded by patents, we rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce, and other elements of our technology, discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. The T-cell immunotherapy product candidates and platform technology we have licensed from our partners are protected primarily as confidential know-how and trade secrets. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate or surpass our technological achievements, including by enabling them to develop and commercialize products substantially similar to or competitive with our product candidates, thus eroding our competitive position in the market.

Trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements and invention assignment agreements with our employees, consultants, and outside scientific advisors, contractors and collaborators. These agreements are designed to protect our proprietary information. Although we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors, or outside scientific advisors might intentionally or inadvertently disclose our trade secrets or confidential, proprietary information to competitors. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. If any of our confidential proprietary information were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position.

Enforcing a claim that a third party illegally obtained and is using any of our trade secrets is expensive and time consuming, and the outcome is unpredictable. In addition, the laws of certain foreign countries do not protect proprietary rights such as trade secrets to the same extent or in the same manner as the laws of the U.S. Misappropriation or unauthorized disclosure of our trade secrets to third parties could impair our competitive advantage in the market and could materially adversely affect our business, results of operations and financial condition.

Risks Related to Commercialization of Our Product Candidates

Our commercial success depends upon attaining significant market acceptance of our product candidates, if approved, among physicians, patients, healthcare payors and the medical community, including hospitals and outpatient clinics.

Even if we obtain regulatory approval for any of our product candidates that we may develop or acquire in the future, the product may not gain market acceptance among physicians, healthcare payors, patients or the medical community that supports our product development efforts, including hospitals and outpatient clinics. Market acceptance of any of our product candidates for which we receive approval depends on a number of factors, including:

- the efficacy and safety of the product candidates as demonstrated in clinical studies;
- the clinical indications and patient populations for which the product candidate is approved;
- acceptance by physicians and patients of the drug as a safe and effective treatment;
- the administrative and logistical burden of treating patients;
- the adoption of novel cellular therapies by physicians, hospitals and third-party payors;
- the potential and perceived advantages of product candidates over alternative treatments;
- the safety of product candidates seen in a broader patient group, including its use outside the approved indications;
- any restrictions on use together with other medications;
- the prevalence and severity of any side effects;
- product labeling or product insert requirements of the FDA or other regulatory authorities;
- the timing of market introduction of our products as well as competitive products;
- the development of manufacturing and distribution processes for our product candidates;
- the cost of treatment in relation to alternative treatments;
- the availability of coverage and adequate reimbursement from, and our ability to negotiate pricing with, third-party payors and government authorities;
- relative convenience and ease of administration; and
- the effectiveness of our sales and marketing efforts and those of our collaborators.

Even if we are able to commercialize our product candidates, the products may not receive coverage and adequate reimbursement from third-party payors in the U.S. and in other countries in which we seek to commercialize our products, which could harm our business.

Our ability to commercialize any product successfully will depend, in part, on the extent to which coverage and adequate reimbursement for these products 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, determine which medications they will cover and establish reimbursement levels. A primary trend in the healthcare industry 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 additional clinical evidence, beyond the data required to obtain regulatory approval, demonstrating clinical benefits and value in specific patient populations before covering our products for those patients. We cannot be sure that coverage and adequate reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. In some countries such as the U.S., greater cost-shifting from the payor to the patient is also a trend, and higher patient copayments or other administrative burdens could lead to reduced demand from patients or healthcare professionals. This could particularly be the case in a challenging economic climate, such as during the ongoing COVID-19 pandemic. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain regulatory approval, and ultimately our ability to successfully commercialize any product candidate for which we obtain regulatory approval.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or comparable foreign regulatory authorities. Moreover, eligibility for coverage and 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 only be temporary. 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 U.S. Coverage and reimbursement policies for drug products can differ significantly from payor to payor as there is no uniform policy of coverage and reimbursement for drug products among third-party payors in the U.S. Third-party payors in the U.S. often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. There may be significant delays in obtaining coverage and reimbursement as the process of determining coverage and reimbursement is often time consuming and costly which will require us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage or adequate reimbursement will be obtained. It is difficult to predict at this time what government authorities and third-party payors will decide with respect to coverage and reimbursement for our drug products. Our inability to promptly obtain coverage and profitable reimbursement rates from both government-funded and private payors for any approved products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Current and future legislation, including potentially unfavorable pricing regulations or other healthcare reform initiatives, may increase the difficulty and cost for us to obtain regulatory approval of and commercialize our product candidates and affect the prices we may obtain.

The regulations that govern, among other things, regulatory approvals, coverage, pricing and reimbursement for new drug products vary widely from country to country. In the U.S. and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay regulatory approval of our product candidates, restrict or regulate post-approval activities and affect our ability to successfully sell any product candidates for which we obtain regulatory approval. In particular, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively, the Affordable Care Act, was enacted, which substantially changed the way healthcare is financed by both governmental and private insurers, and continues to significantly impact the U.S. pharmaceutical industry. The Affordable Care Act and its implementing regulations, among other things, addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics, including our product candidates, increased the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program, extended the Medicaid Drug Rebate Program to utilization of prescriptions of individuals enrolled in Medicaid managed care organizations, subjected manufacturers to new annual fees and taxes for certain branded prescription drugs, provided incentives to programs that increase the federal government's comparative effectiveness research and established a new Medicare Part D coverage gap discount program.

Other legislative changes have been proposed and adopted in the U.S. since the Affordable Care Act was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by the U.S. Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013, and, due to subsequent legislative amendments, will remain in effect through 2030 unless additional Congressional action is taken. The Coronavirus Aid, Relief and Economic Security Act (CARES Act), which was signed into law in March 2020 and is designed to provide financial support and resources to individuals and businesses affected by the COVID-19 pandemic, suspended the 2% Medicare sequester from May 1, 2020 through December 31, 2020, and extended the sequester by one year, through 2030. In January 2013, the American Taxpayer Relief Act of 2012 (the ATRA) was enacted which, among other things, further reduced Medicare payments to several providers, including hospitals and outpatient clinics, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

There remain judicial and Congressional challenges to numerous elements of the Affordable Care Act, as well as efforts by both the executive and legislative branches of the federal government to repeal or replace certain aspects of the Affordable Care Act. For example, the President signed Executive Orders designed to delay the implementation of certain provisions of the Affordable Care Act or otherwise circumvent some of the requirements for health insurance mandated by the Affordable Care Act. In addition, the U.S. Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While the U.S. Congress has not passed comprehensive repeal legislation, it has enacted laws that modify certain provisions of the Affordable Care Act, such as removing penalties, starting January 1, 2019, for not complying with the Affordable Care Act's individual mandate to carry health insurance, eliminating the implementation of certain mandated fees, and increasing the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D. In December 2018, a Texas District Court Judge ruled that the

Affordable Care Act is unconstitutional in its entirety because the "individual mandate" was repealed by Congress as part of the Tax Cuts and Jobs Act of 2017In December 2019, the U.S. Court of Appeals for the 5th Circuit upheld the Texas District Court ruling that the individual mandate was unconstitutional and remanded the case back to the Texas District Court to determine whether the remaining provisions of the Affordable Care Act are invalid as well. In March 2020, the United States Supreme Court granted the petitions for writs of certiorari to review this case, which are expected to occur in the fourth quarter of 2020.

It is unclear how this litigation and other efforts to repeal and replace the Affordable Care Act will impact the Affordable Care Act and our business. The U.S. Congress may consider and adopt other legislation to repeal and replace all or certain elements of the Affordable Care Act. Any other executive, legislative or judicial action to "repeal and replace" all or part of the Affordable Care Act may have the effect of limiting the amounts that government agencies will pay for healthcare products and services, which could result in reduced demand for our products or additional pricing pressure, or may lead to significant deregulation, which could make the introduction of competing products and technologies much easier. Policy changes, including potential modification or repeal of all or parts of the Affordable Care Act or the implementation of new healthcare legislation, could result in significant changes to the healthcare system which may adversely affect our business in unpredictable ways.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of governments, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare, including by imposing price controls, may adversely affect the demand for our product candidates for which we obtain regulatory approval and our ability to set a price that we believe is fair for our products. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA or foreign regulations, guidance or interpretations will be changed, or what the impact of these changes on the regulatory approvals of our product candidates, if any, may be. In the U.S., the European Union and other potentially significant markets for our product candidates, government authorities and third-party payors are increasingly attempting to limit or regulate the price of medical products and services, particularly for new and innovative products and therapies, which has resulted in lower average selling prices for certain products in certain markets. For example, in the U.S., there have been several recent Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. At the federal level, the U.S. presidential administration's budget proposal for the fiscal year 2021 includes a $135 billion allowance to support legislative proposals seeking to reduce drug prices, increase competition, lower out-of-pocket drug costs for patients, and increase patient access to lower-cost generic and biosimilar drugs. In March 2020, the administration sent "principles" for drug pricing to Congress, calling for legislation that would, among other things, cap Medicare Part D beneficiary out-of-pocket pharmacy expenses, provide an option to cap Medicare Part D beneficiary monthly out-of-pocket expenses, and place limits on pharmaceutical price increases. Additionally, in May 2018, the U.S. presidential administration previously laid out a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contained additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. HHS has solicited feedback on some of these measures and has implemented others under its existing authority. For example, in May 2019, CMS issued a final rule to allow Medicare Advantage plans the option to use step therapy for Part B drugs beginning January 1, 2020. This final rule codified CMS's policy change that was effective January 1, 2019. On July 24, 2020, the presidential administration announced four executive orders related to prescription drug pricing that attempt to implement several of the administration's proposals, including a policy that would tie Medicare Part B drug prices to international drug prices; one that directs HHS to finalize the Canadian drug importation proposed rule previously issued by HHS and makes other changes allowing for personal importation of drugs from Canada; one that directs HHS to finalize the rulemaking process on modifying the anti-kickback law safe harbors for discounts for plans, pharmacies, and pharmaceutical benefit managers; and one that reduces costs of insulin and epipens to patients of federally qualified health centers. It is possible that additional governmental action is taken in response to the COVID-19 pandemic. For example, on August 6, 2020, the presidential administration issued another executive order that instructs the federal government to develop a list of "essential" medicines and then buy them and other medical supplies from U.S. manufacturers instead of from companies around the world, including China. Although some of these and other proposals may require additional authorization to become effective, members of Congress and the presidential administration have indicated that they will continue to seek new legislative or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented 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, to encourage importation from other countries and bulk purchasing. Furthermore, the increased emphasis on managed healthcare in the U.S. and on country and regional pricing and reimbursement controls in the European Union will put additional pressure on product pricing, reimbursement and usage, which may adversely affect our future product sales. These pressures can arise from rules and practices of managed care groups, judicial decisions and governmental laws and regulations related to Medicare, Medicaid and healthcare reform, pharmaceutical reimbursement policies and pricing in general.

In addition, there is significant uncertainty regarding the reimbursement status of newly approved healthcare products. We may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost-effectiveness of our products. If third-party payors do not consider our products to be cost-effective compared to other therapies, the payors may not cover our products after approved as a benefit under their plans or, if they do, the level of payment may not be sufficient to allow us to sell our products on a profitable basis.

Price controls may be imposed in foreign markets, which may adversely affect our future profitability.

In some countries, particularly member states of the European Union, the pricing of prescription drugs is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after receipt of regulatory approval for a product. In addition, there can be considerable pressure by governments and other stakeholders on prices and reimbursement levels, including as part of cost containment measures. Political, economic and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. 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. In some countries, we, or our collaborators, may be required to conduct a clinical study or other studies that compare the cost-effectiveness of our product candidates to other available therapies in order to obtain or maintain reimbursement or pricing approval. 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 reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be adversely affected.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

We face competition from numerous pharmaceutical and biotechnology enterprises, as well as from academic institutions, government agencies and private and public research institutions for our current product candidates. Our commercial opportunities will be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer side effects or are less expensive than any products that we may develop. Additionally, our commercial opportunities will be reduced or eliminated if novel upstream products or changes in treatment protocols reduce the overall incidence or prevalence of our current or future target diseases. Competition could result in reduced sales and pricing pressure on our product candidates, if approved by applicable regulatory authorities. In addition, significant delays in the development of our product candidates could allow our competitors to bring products to market before us and impair any ability to commercialize our product candidates.

There are currently no FDA- or EMA-approved products for the treatment ofEBV+ PTLD. However, some marketed products and therapies are used off-label in the treatment of EBV+ PTLD, such as rituximab and combination chemotherapy regimens. In addition, a number of companies and academic institutions are developing product candidates for EBV+ PTLD and other EBV-associated diseases including: Viracta Therapeutics, Inc., which is conducting a Phase 1b/2 clinical study for nanatinostat (formerly named tractinostat, or VRx-3996) in combination with antiviral drug valganciclovir in relapsed/refractory EBV+ lymphomas; AlloVir (formerly known as ViraCyte), which has completed a Phase 2 clinical study for Viralym-M (ALVR105), an allogeneic, multi-virus T-cell product that targets six viruses in allogeneic HSCT recipients with ≥1 treatment-refractory infection, including EBV, and is planning to initiate several Phase 3 studies for CMV, AdV and Virus-Associated Hemorrhagic-Cystitis, as well as a Phase 1b/2 proof of concept trial for the prevention of BKV, CMV, AdV, EBV, HHV06 and JCV; and Tessa Therapeutics Pte Ltd., which has a Phase 3 autologous EBV-specific T-cell therapy (TT10) and a preclinical product candidate that is an allogeneic CD30-targeted CAR EBV-specific T-cell therapy.

Competition in the MS market is high with at least 20 therapies, including four generics or bioequivalents, approved for the treatment of relapsing forms of MS (RMS), including clinically isolated syndrome, relapsing-remitting disease (RRMS) and active secondary progressive disease, in the U.S. and EU. There are many competitors in the RMS market, including major multi-national fully-integrated pharmaceutical companies and established biotechnology companies. Most recently, Kesimpta® (anti-CD20 monoclonal antibody), marketed by Novartis, was approved in the U.S. for the treatment of RMS, and a decision for its approval for treatment of the same indication in the EU is expected in the first half of 2021. Additionally, Mayzent® (siponimod), marketed by Novartis, is approved in the EU for the same indication. There are numerous development candidates in Phase 3 studies for RMS including TG Therapeutics' anti-CD20 monoclonal antibody ublituximab and EMD Serono's Bruton's tyrosine kinase (BTK) inhibitor, evobrutinib. Johnson & Johnson has completed Phase 3 studies of its sphingosine-1-phosphate receptor 1 (S1P1) modulator, ponesimod, and has sought regulatory approval in the U.S. and EU.

Two therapies have been approved for the treatment of non-relapsing, progressive forms of MS. Ocrevus® is approved in the U.S. and EU for the treatment of PPMS. Mitoxantrone, which is now generic, is approved to treat SPMS, without relapses, in the U.S.

The SPMS and PPMS markets have active development pipelines and additional novel agents could be approved in the future. Several development candidates are being evaluated in Phase 3 studies for progressive forms of MS including primary and secondary progressive MS, including AB Science's masitinib, a tyrosine kinase inhibitor; Sanofi's SAR442168, a BTK inhibitor; and Roche's fenebrutinib, a BTK inhibitor. Medicinova is planning to initiate a Phase 3 study of its PDE inhibitor, ibudilast (MN166) in patients with non-relapsing secondary progressive MS.

There are currently three autologous CAR T therapies approved in the U.S. and/or EU: Novartis' Kymriah® (tisagenlecleucel) and Gilead/Kite's Yescarta® (axicabtagene ciloleucel) and Tecartus™ (brexucabtagene autoleucel). Bristol-Myers Squibb has filed BLAs to the US FDA for lisocabtagene maraleucel (liso-cel) (November 2020 PDUFA) and for idecabtagene vicleucel (March 2021 PDUFA) with bluebird bio. There are many CAR-mediated cell therapies in development, and, although the majority are autologous, they include allogeneic and off-the-shelf cell therapies. There are multiple allogeneic CAR platforms being developed with differences in approaches to minimize instances of donor cells recognizing the patient's body as foreign or rejection of the donor cells by the patient's body. These approaches include the use of gene-editing to remove or inhibit the TCR and the use of cell types without a TCR. The majority of clinical stage allogeneic CAR programs utilize alpha beta T cells as the cell type and gene editing of the T-cell receptor and HLA as the preferred technology approach, however, other strategies are also in development. It is possible that some of these other approaches will have more favorable characteristics than the approach we utilize, which would result in them being favored by potential partners or customers over our products. Depending on the diseases that we target in the future, we may face competition from both autologous and allogeneic CAR therapies and other modalities (e.g. small molecules, antibodies) in the indication of interest.

Many of the approved or commonly used drugs and therapies for our current or future target diseases, including EBV+ PTLD and MS, are well established and are widely accepted by physicians, patients and third-party payors. Some of these drugs are branded and subject to patent protection, and other drugs and nutritional supplements are available on a generic basis. Insurers and other third-party payors may encourage the use of generic products or specific branded products. We expect that, if any of our product candidates are approved, they will be priced at a significant premium over competitive generic products. Absent differentiated and compelling clinical evidence, pricing premiums may impede the adoption of our products over currently approved or commonly used therapies, which may adversely impact our business. In addition, many companies are developing new therapeutics, and we cannot predict what the standard of care will become as our products continue in clinical development.

Many of our competitors or potential competitors have significantly greater established presence in the market, financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical studies, obtaining regulatory approvals and marketing approved products than we do, and as a result may have a competitive advantage over us. Smaller or early-stage companies may also prove to be significant competitors, including through collaborative arrangements with large and established companies or if they are acquired by larger companies. These third parties compete with us in recruiting and retaining qualified scientific, commercial and management personnel, establishing clinical study sites and patient registration for clinical studies, as well as in acquiring technologies and technology licenses complementary to our programs or advantageous to our business.

As a result of these factors, these competitors may obtain regulatory approval of their products before we are able to obtain patent protection or other intellectual property rights, which will limit our ability to develop or commercialize our product candidates. Our competitors may also develop drugs that are safer, more effective, more widely used and cheaper than ours, and may also be more successful than us in manufacturing and marketing their products. These appreciable advantages could render our product candidates obsolete or noncompetitive before we can recover the expenses of development and commercialization.

We expect the product candidates we develop will be regulated as biological products (biologics) and therefore they may be subject to competition sooner than anticipated.

The Biologics Price Competition and Innovation Act of 2009 (BPCIA) was enacted as part of the Affordable Care Act to establish an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an approved biologic. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the reference product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty. While it is uncertain when processes intended to implement BPCIA may be fully adopted by the FDA, any of these processes could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of the product candidates we develop that is approved in the U.S. as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider the subject product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of the reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

In addition, the approval of a biologic product biosimilar to one of our products could have a material adverse impact on our business as it may be significantly less costly to bring to market and may be priced significantly lower than our products.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to market and sell our product candidates, we may be unable to generate any revenue.

We are at any early stage of establishing an organization that will be responsible for the sale, marketing and distribution of pharmaceutical products and the cost of establishing and maintaining such an organization may exceed the cost-effectiveness of doing so. In order to market any products that may be approved by the FDA and comparable foreign regulatory authorities, we must build our sales, marketing, managerial and other non-technical capabilities or make arrangements with third parties to perform these services. There are significant risks involved in building and managing a sales organization, including our ability to hire, retain and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may be competing with many companies that currently have extensive and well-funded sales and marketing operations. Without a sufficiently scaled, appropriately timed and trained internal commercial organization or the support of a third party to perform sales and marketing functions, we may be unable to compete successfully against these more established companies.

We may need to grow the size of our organization, and we may experience difficulties in managing this growth.

As of September 30, 2020, we had 429 employees. We have made the decision to grow the size of our organization in order to support our continued development and potential commercialization of our product candidates. In particular, we may need to add substantial numbers of additional personnel and other resources to support our development and potential commercialization of our product candidates. As our development and commercialization plans and strategies continue to develop, or as a result of any future acquisitions, our need for additional managerial, operational, manufacturing, sales, marketing, financial and other resources will increase. Our management, personnel and systems currently in place may not be adequate to support this future growth. Future growth would impose significant added responsibilities on members of management, including:

- managing our preclinical and clinical studies effectively;
- identifying, recruiting, maintaining, motivating and integrating additional employees;
- managing our internal development efforts effectively while complying with our contractual obligations to licensors, licensees, contractors and other third parties;
- improving our managerial, development, operational, information technology, and finance systems; and
- expanding our facilities.

As our operations expand, we will also need to manage additional relationships with various strategic partners, suppliers and other third parties. Our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To that end, we must be able to manage our development efforts and preclinical and clinical studies effectively and hire, train and integrate additional management, research and development, manufacturing, administrative and sales and marketing personnel. Our failure to accomplish any of these tasks could prevent us from successfully growing our company.

Risks Related to Ownership of Our Common Stock

Our stock price has been and will likely continue to be volatile and may decline regardless of our operating performance.

Our stock price has fluctuated in the past and can be expected to be volatile in the future. From January 1, 2018 through September 30, 2020, the reported sale price of our common stock has fluctuated between $4.52 and $54.45 per share. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. In particular, the ongoing COVID-19 pandemic has further heightened the volatility of the stock market for biopharmaceutical companies. As a result of this volatility, investors may experience losses on their investment in our common stock. The market price of our common stock may be influenced by many factors, including the following:

- the success of competitive products or technologies;
- regulatory actions with respect to our product candidates or products or our competitors' product candidates or products;
- actual or anticipated changes in our growth rate relative to our competitors;

- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- results of clinical studies of our product candidates or those of our competitors;
- regulatory or legal developments in the U.S. and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our product candidates or clinical development programs;
- the results of our efforts to in-license or acquire additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be similar to us;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- inconsistent trading volume levels of our shares;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions; and
- the other risks described in this “Risk Factors” section.

In addition, the stock markets in general, and the markets for biotechnology and pharmaceutical stocks in particular, have experienced significant volatility that has often been unrelated to the operating performance of particular companies, including in connection with the ongoing COVID-19 pandemic, which has resulted in decreased stock prices for many companies. For example, negative publicity regarding drug pricing and price increases by pharmaceutical companies has negatively impacted, and may continue to negatively impact, the markets for biotechnology and pharmaceutical stocks. Likewise, as a result of significant changes in U.S. social, political, regulatory and economic conditions or in laws and policies governing foreign trade and healthcare spending and delivery, including the possible repeal and/or replacement of all or portions of the Affordable Care Act or changes in tariffs and other restrictions on free trade stemming from U.S. and foreign government policies, or for other reasons, the financial markets could experience significant volatility that could also negatively impact the markets for biotechnology and pharmaceutical stocks. These market fluctuations may adversely affect the trading price of our common stock.

In the past, class action litigation has often been instituted against companies whose securities have experienced periods of volatility in market price. Any such litigation brought against us could result in substantial costs and divert management’s attention and resources, which could result in delays of our clinical studies or commercialization efforts.

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

Our executive officers, directors and principal stockholders own a significant portion of our outstanding common stock. These stockholders may be able to determine the outcome of all matters requiring stockholder approval. For example, these stockholders may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets, or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock. The interests of our significant stockholders may not always coincide with the interests of other stockholders and they may act in a manner that advances their best interests and not necessarily those of other stockholders, including seeking a premium value for their common stock, and might affect the market price for our common stock.

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

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. Moreover, certain holders of shares of our common stock will have rights, subject to certain conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We have registered and intend to continue to register all shares of common stock that we may issue under our equity compensation plans. Once we register these shares, they can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates.

We have incurred and will continue to incur increased costs as a result of being a public company and our management expects to devote substantial time to public company compliance programs.

As a public company, we have incurred and will continue to incur significant legal, accounting and other expenses. We are subject to the reporting requirements of the Exchange Act, which require, among other things, that we file with the SEC annual, quarterly and current reports with respect to our business and financial condition. In addition, the Sarbanes-Oxley Act, as well as rules subsequently adopted by the SEC and The Nasdaq Stock Market to implement provisions of the Sarbanes-Oxley Act, impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. Further, pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the SEC has adopted and will adopt additional rules and regulations, such as mandatory "say on pay" voting requirements, that now apply to us. Stockholder activism, the current political environment and the potential for future regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate.

The rules and regulations applicable to public companies have substantially increased our legal and financial compliance costs and make some activities more time-consuming and costly. To the extent these requirements divert the attention of our management and personnel from other business concerns, they could have a material adverse effect on our business, financial condition and results of operations. The increased costs will decrease our net income or increase our net loss and may require us to reduce costs in other areas of our business or increase the prices of our products or services.

Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, will be the sole source of potential gain for our stockholders.

We have never declared or paid cash dividends on our capital stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders for the foreseeable future.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.

We expect that significant additional capital will be needed in the future to continue our planned operations. To raise capital, we may sell substantial amounts of common stock or securities convertible into or exchangeable for common stock in one or more transactions at prices and in a manner we determine from time to time. These future issuances of common stock or common stock-related securities, together with the exercise of outstanding options or warrants, and any additional shares issued in connection with acquisitions or in-licenses, if any, may result in material dilution to our investors. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences and privileges senior to those of holders of our common stock. To the extent equity valuations, including the trading price of our common stock, are depressed as a result of economic disruptions and uncertainty concerning the COVID-19 pandemic or other factors, the potential magnitude of this dilution will increase. Pursuant to our equity incentive plans, our compensation committee is authorized to grant equity-based incentive awards to our employees, non-employee directors and consultants. Future grants of RSUs, options and other equity awards and issuances of common stock under our equity incentive plans will result in dilution and may have an adverse effect on the market price of our common stock.

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

Our amended and restated certificate of incorporation (Certificate of Incorporation) and amended and restated bylaws (Bylaws), as well as Delaware law, could make it more difficult for a third party to acquire us or increase the cost of acquiring us, even if doing so would benefit our stockholders, or remove our current management. These include terms that:

- permit our board of directors to issue up to 20,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that all vacancies on our board of directors, including as a result of newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- establish that our board of directors is divided into three classes, with each class serving three-year staggered terms, which makes it more difficult to replace a majority of our directors in a short period of time;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide advance notice in writing, and also specify requirements as to the form and content of a stockholder's notice;
- not provide for cumulative voting rights, thereby allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election; and
- provide that special meetings of our stockholders may be called only by our board of directors, the chairperson of our board of directors or our chief executive officer.

Any of the factors listed above may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, who are responsible for appointing the members of our management.

In addition, because we are incorporated in Delaware, we are governed by Section 203 of the Delaware General Corporation Law, which may discourage, delay or prevent someone from acquiring us or merging with us whether or not it is desired by or beneficial to our stockholders. Under Delaware law, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, the board of directors has approved the transaction. Any term of our Certificate of Incorporation or Bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock.

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

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us and our business. In the event securities or industry analysts who cover us downgrade our stock or publish unfavorable research about us or our business, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

General Risk Factors

Our future success depends on our ability to retain our executive officers and to attract, retain and motivate qualified personnel.

We are highly dependent upon our executive officers and other key employees and the loss of the services of any of our executive officers or other key employees, including scientific, technical or management personnel, could impede the achievement of our corporate objectives.

Our success depends on our ability to recruit, retain, manage and motivate our employees. Although we enter into employment agreements or offer letters with our employees, these documents provide for "at-will" employment, which means that any of our employees could leave our employment at any time, with or without notice. Competition for skilled personnel in our industry and geographic regions is intense and may limit our ability to hire and retain qualified personnel on acceptable terms or at all. To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided equity awards that vest over time. The value to employees of equity awards 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.

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

Healthcare providers, including physicians, and third-party payors will play a primary role in the recommendation and prescription of any product candidates for which we obtain regulatory approval. Our current and future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we conduct research and would market, sell and distribute our products. As a pharmaceutical company, even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. Restrictions under applicable federal and state healthcare laws and regulations that may affect our ability to operate include the following:

- the federal healthcare Anti-Kickback Statute, which governs our marketing practices, educational programs, pricing policies, and relationships with healthcare providers or other entities, by prohibiting, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under a federal healthcare program such as Medicare and Medicaid;
- federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws impose criminal and civil penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment or approval that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and also created federal criminal laws that prohibit knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statements in connection with the delivery of or payment for healthcare benefits, items or services;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (HITECH) also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information held by covered entities and their business associates and their subcontractors that use, disclose or otherwise process individually identifiable health information;
- the federal physician sunshine requirements under the Affordable Care Act requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to CMS information related to payments and other transfers of value to physicians, as defined by this law, and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations, which will be expanded beginning in 2022, to require applicable manufacturers to report such information regarding its relationships with physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists and certified nurse midwives during the previous year;
- state and foreign laws and regulations that are analogous to the federal laws and regulations described in the preceding subsections of this risk factor, such as state anti-kickback and false claims laws, 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
- some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; some state laws require drug manufacturers to report information regarding pricing and marketing information related to payments and other transfers of value to physicians and other healthcare providers; some state and local laws require the registration of pharmaceutical sales representatives; and other state laws require the protection of the privacy and security of health information, which may differ from each other in significant ways and often are not preempted by HIPAA.

Efforts to ensure that our business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law involving applicable healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion from government-funded healthcare programs, such as Medicare and Medicaid, disgorgement, additional reporting requirements or oversight if we become subject to a corporate integrity agreement or similar agreement, and the curtailment or restructuring of our operations. If any physicians or other healthcare providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to significant criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs.

Our employees may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could cause significant liability for us and harm our reputation.

We are exposed to the risk of employee fraud or other misconduct, including intentional failures to comply with FDA regulations or similar regulations of comparable foreign regulatory authorities, provide accurate information to the FDA or comparable foreign regulatory authorities, comply with manufacturing standards we have established, comply with federal and state healthcare fraud and abuse laws and regulations and similar laws and regulations established and enforced by comparable foreign regulatory authorities, report financial information or data accurately or disclose unauthorized activities to us. Employee misconduct could also involve the improper use of information obtained in the course of clinical studies, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and results of operations, including the imposition of significant fines or other sanctions.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we may develop.

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

- decreased demand for any product candidates or products that we may develop;
- termination of clinical study sites or entire study programs;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical study participants;
- significant costs to defend the related litigation;
- substantial monetary awards to study subjects or patients;
- loss of revenue;
- diversion of management and scientific resources from our business operations; and
- the inability to commercialize any products that we may develop.

We currently hold product liability insurance coverage at a level that we believe is customary for similarly situated companies and adequate to provide us with insurance coverage for foreseeable risks, but which may not be adequate to cover all liabilities that we may incur. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise. We intend to expand our insurance coverage for products to include the sale of commercial products if we obtain regulatory approval for our product candidates in development, but we may be unable to obtain commercially reasonable product liability insurance for any products that receive regulatory approval. Large judgments have been awarded in class action lawsuits based on drugs that had unanticipated side effects. A successful product liability claim or series of claims brought against us, particularly if judgments exceed our insurance coverage, could decrease our cash and adversely affect our business.

If we and our third-party manufacturers fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

We and our third-party manufacturers are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our or our third-party manufacturers' use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials with a policy limit that we believe is customary for similarly situated companies and adequate to provide us with insurance coverage for foreseeable risks, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological or hazardous materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions, which could adversely affect our business, financial condition, results of operations and prospects.

Our business and operations would suffer in the event of computer system failures or security breaches.

Our internal computer systems, and those of our partners, our CROs, our CMOs, and other business vendors on which we rely, are vulnerable to damage from computer viruses, unauthorized access, natural or man-made disasters, fire, terrorism, war and telecommunication and electrical failures. We exercise little or no control over these third parties, which increases our vulnerability to problems with their systems. Additionally, the increased usage of computers operated on home networks due to the shelter-in-place or similar restrictions related to the COVID-19 pandemic may make our systems more susceptible to security breaches. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our drug development programs. For example, the loss of clinical study data from completed, ongoing or planned clinical studies could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach results in a loss of or damage to our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability, the further development of our product candidates could be delayed and our business could be otherwise adversely affected.

Changes in tax laws or regulations that are applied adversely to us or our customers may have an adverse effect on our business, cash flows, financial condition or results of operations.

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could adversely affect our business and financial condition. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. For example, legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act (the Tax Act), enacted many significant changes to the U.S. tax laws. Future guidance from the Internal Revenue Service and other tax authorities with respect to the Tax Act may affect us, and certain aspects of the Tax Act repealed or modified in future legislation. For example, the CARES Act modified certain provisions of the Tax Act. In addition, it is uncertain if and to what extent various states will conform to the Tax Act, the CARES Act or any other newly enacted federal tax legislation. Changes in corporate tax rates, the realization of net deferred tax assets relating to our operations, the taxation of foreign earnings, and the deductibility of expenses under the Tax Act or future reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges, and could increase our future U.S. tax expense. However, given our valuation allowance position, the Tax Act is not expected to have a significant impact on our effective tax rate, cash tax expenses or net deferred tax assets.

Our ability to use net operating loss carryforwards to offset future taxable income, and our ability to use tax credit carryforwards, may be subject to certain limitations.

Our ability to use our federal and state net operating losses (NOLs) to offset potential future taxable income and related income taxes that would otherwise be due is dependent upon our generation of future taxable income, and we cannot predict with certainty when, or whether, we will generate sufficient taxable income to use all of our NOLs.

As of December 31, 2019, we reported U.S. federal and state NOLs of approximately $547.7 million and $695.4 million, respectively. Our federal NOLs generated prior to 2018 aggregating to $77.1 million will continue to be governed by the NOL tax rules as they existed prior to the adoption of the Tax Act, which means that generally they will expire 20 years after they were generated if not used prior thereto. Many states have similar laws, and our state NOLs will begin to expire in 2032. Accordingly, these federal and state NOLs could expire unused and be unavailable to offset future income tax liabilities. Under the Tax Act, as modified by the CARES Act, federal NOLs incurred in 2018 and in future years may be carried forward indefinitely, but the utilization of such federal NOLs arising in taxable years beginning after 2020 is limited to 80% of current year taxable income. Not all states conform to the Tax Act or CARES Act and other states have varying conformity to the Tax Act or CARES Act.

In addition, under Section 382 of the Internal Revenue Code of 1986, as amended (the Code), our ability to utilize these NOLs and other tax attributes, such as federal tax credits, in any taxable year may be limited if we have experienced an "ownership change." Generally, a Section 382 ownership change occurs if 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 three-year testing period. Similar rules may apply under state tax laws. We completed a Section 382 study of transactions in our stock through December 31, 2019 and concluded that we have experienced ownership changes since inception that we believe under Section 382 of the Code will result in limitations in our ability to use certain of our NOLs and credits. In addition, we may experience subsequent ownership changes as a result of future equity offerings or other changes in the ownership of our stock, some of which are beyond our control. As a result, the amount of the NOLs and tax credit carryforwards presented in our financial statements could be limited and, in the case of NOLs generated in 2017 and before, may expire unused. Any such material limitation or expiration of our NOLs may harm our future operating results by effectively increasing our future tax obligations.

Business disruptions could seriously harm our future revenues and financial condition and increase our costs and expenses.

Our operations 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, for which we are predominantly self-insured. Two of our corporate locations are located in California, an area prone to earthquakes and fires. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We rely on third-party manufacturers to produce our product candidates. Our ability to obtain clinical supplies of product candidates could be disrupted, if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption, including, for example, the ongoing COVID-19 pandemic.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit No.	Description of Exhibit	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation of Atara Biotherapeutics, Inc.	S-1	333-196936	3.2	6/20/2014	
3.2	Amended and Restated Bylaws of Atara Biotherapeutics, Inc.	S-1	333-196936	3.4	6/20/2014	
10.1+	Third Amended and Restated Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 26, 2020					X
10.2+	Third Amended and Restated Research and Development Collaboration Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 26, 2020					X
10.3*	Amended and Restated 2018 Inducement Plan					X
10.4	First Amendment to Lease, by and between BXP 611 Gateway Center LP and Atara Biotherapeutics, Inc., dated as of October 21, 2020					X
31.1	Certification by Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification by Principal Financial and Accounting Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1(1)	Certifications of Chief Executive Officer and Principal Financial and Accounting Officer pursuant to 18 U.S.C Section 1350 as adopted pursuant to Section 906 of The Sarbanes-Oxley Act of 2002					X
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X

101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.	X
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, formatted in Inline XBRL.	X

+ Portions of this exhibit have been omitted as being both (i) not material and (ii) would likely cause competitive harm if publicly disclosed.

* Indicates management contract or compensatory plan or arrangement.

(1) The certifications attached as Exhibit 32.1 accompany this Quarterly Report on Form 10-Q pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed "filed" by the Registrant for purposes of Section 18 of the Securities Exchange Act of 1934, as amended.

SIGNATURES

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

ATARA BIOTHERAPEUTICS, INC.

Date: November 9, 2020

By: /s/ Pascal Touchon
Pascal Touchon
President and Chief Executive Officer
(Duly Authorized Officer and Principal Executive Officer)

By: /s/ Utpal Koppikar
Utpal Koppikar
Chief Financial Officer
(Duly Authorized Officer and Principal Financial and Accounting Officer)

[***] = Certain information contained in this document, marked by brackets, has been omitted because it is both not material and would be competitively harmful if publicly disclosed.

Exhibit 10.1

EXECUTION VERSION

THIRD AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT

between

THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH

and

ATARA BIOTHERAPEUTICS, INC.

TABLE OF CONTENTS

THIRD AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT

This **THIRD AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT** ("**Third Restated Agreement**") is entered into on August 26, 2020 ("**Execution Date** "), and effective as of the Execution Date, by and between the **COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH** , a not-for-profit Institute organized and existing under the laws of the State of Queensland having its principal offices at 300 Herston Rd, Herston QLD 4006, Australia ("**Institute**"), and **ATARA BIOTHERAPEUTICS, INC.**, a Delaware corporation located at 611 Gateway Blvd #900, South San Francisco, CA 94080 ("**Licensee**"). Each of Licensee and Institute are referred to in this Agreement as a "**Party**" and together, the "**Parties**".

RECITALS

WHEREAS, Institute owns or controls certain technology, including certain patent rights and know-how, and has expertise and knowledge relating to allogeneic and autologous cytotoxic T-lymphocytes ("**CTL**") directed to antigens expressed in association with certain viral infections, for use in oncology and autoimmune indications, made in the course of research at Institute in the laboratory of [***] and are claimed in certain Patent Rights (as defined herein);

WHEREAS, Licensee is a party to a certain agreement with Memorial Sloan Kettering Cancer Center (the "**MSK Agreement**", as further defined below), pursuant to which Licensee obtained [***] at Memorial Sloan Kettering Cancer Center in the laboratory of [***], including [***] to targets that include, inter alia, EBV and CMV;

WHEREAS, Licensee and MSK consider the technology and patent rights owned or controlled by Institute to be complimentary and/or supplemental to the rights licensed to Licensee by Memorial Sloan Kettering Cancer Center under the MSK Agreement, and that such Institute technology will be useful for the development, production, or use of Licensed Products (as defined herein) specific to EBV;

WHEREAS, Licensee wishes to obtain certain rights from Institute to use such Institute technology and patent rights for the commercial development of (a) products based on novel allogeneic and autologous CTLs, and (b) [***], in each case directed to viral antigens expressed in association with certain diseases and conditions, in accordance with the terms and conditions set forth herein, and Institute is willing to grant those rights to Licensee so that such products may be developed and the benefits enjoyed by the general public;

WHEREAS, Licensee and Institute are parties to that certain exclusive License Agreement (the "**Original License Agreement**"), entered into on October 20, 2015 (the "**Original Effective Date**"), which was amended and restated as of September 23, 2016 (the "**First Restatement Date**") pursuant to that certain Amended and Restated Exclusive License Agreement (the "**First Restated Agreement**") effective as of the Original Effective Date, which was amended and restated for a second time as of August 28, 2019 (the "**Second Restatement Date**") pursuant to that certain Second Amended and Restated Exclusive License Agreement (the "**Second Restated Agreement**"), and now the Parties desire to amend and restate the Second Restated Agreement in its entirety to, among other things, [***] [***], all as set forth in this Third Restated Agreement; and

WHEREAS, the Parties further desire that Institute continues to carry out certain research and development activities already being conducted at or under the supervision of Institute, including certain clinical studies directed to the use of autologous CTL therapies in certain oncology and autoimmune indications associated with the expression of EBV [***] on or in tumor and other cells, and to that end, the Parties entered into that certain Research and Development Collaboration Agreement (the "**Original Research Agreement**") simultaneous with the Original License Agreement on the Original Effective Date, which Original Research Agreement was amended and restated as of the First Restatement Date pursuant to that certain Amended and Restated Research and Development Collaboration Agreement and was subsequently amended on December 15, 2017, April 24, 2018 and May 9, 2018 (as so amended, the "**First Restated Research Agreement**"), which, in turn, was amended and restated on the Second Restatement Date pursuant to that certain Second Amended and Restated Research and Development Collaboration Agreement ("**Second Restated Research Agreement**"), and the Second Restated Research Agreement is being amended and restated in its entirety pursuant to that certain Third Amended and Restated Research and Development Collaboration Agreement simultaneously with entering into this Third Restated Agreement (the "**Third Restated Research Agreement**").

NOW, THEREFORE, in consideration of the foregoing and the covenants and promises contained in this Agreement, and intending to be legally bound, the parties agree as follows:

1. **DEFINITIONS**

As used in this Agreement, the following terms, whether used in the singular or plural, shall have the following meanings:

1.1 "[***] **Technology**" shall have the meaning given in Section 2.4(a).

1.2 "**Additional License**" shall have the meaning given in Section 4.4.

1.3 "**Additional License Payments**" shall have the meaning given in Section 4.4.

1.4 "**Additional Party**" shall have the meaning given in Section 4.4.

1.5 "**Affiliate**" of a Party means any entity which, directly or indirectly, controls such Party, is Controlled by such Party or is under common Control with such Party. For purposes of the Affiliate definition, "**Control**" means: (a) having the actual, present capacity to elect a majority of the directors of such affiliate; (b) having the power to direct at least fifty percent (50%) of the voting rights entitled to elect directors; or (c) in any country where the local law will not permit foreign equity participation of a majority, ownership or control, directly or indirectly, of the maximum percentage of such outstanding stock or voting rights permitted by local law.

1.6 "**Agreement**" means the First Restated Agreement as in effect from the Original Effective Date until the Second Restatement Date, together with the Second Restated Agreement as in effect from the Second Restatement Date until the Execution Date, together with this Third Restated Agreement, which pursuant to Section 23.5, replaces the Second Restated Agreement as of the Execution Date.

1.7 "**Allogeneic CTL**" means CTLs derived from cells obtained from one individual subject and treated, modified, manipulated or otherwise altered for the purposes of delivery to a second, genetically distinct individual subject.

1.8 "**Allogeneic CTL Product**" means a CTL Product or a New CTL Product derived from or incorporating Allogeneic CTLs.

1.9 "**Autologous CTL**" means CTLs derived from cells obtained from one individual subject and treated, modified, manipulated or otherwise altered for the purposes of delivery back to the same individual subject.

1.10 "**Autologous CTL Product**" means a CTL Product or a New CTL Product derived from or incorporating Autologous CTLs.

1.11 "**Background IP**" means all intellectual property rights (a) Controlled by a Party prior to the Original Effective Date or (b) Controlled by such Party during the Term, but not generated in the performance of the activities contemplated under this Agreement or the Research Agreement.

1.12 "**Base Patent Rights**" shall have the meaning given in Section 13.2(a).

1.13 "[***]" shall have the meaning given in Section 4.4.

1.14 "**Billion**" means one thousand million.

1.15 "**BKV/JCV-Specific CTL Product**" means a pharmaceutical or biologic product comprising Autologous CTLs or Allogeneic CTLs, in either case, Specifically Directed to [***] associated with BK Polyomavirus ("**BKV**") and/or JC Polyomavirus ("**JCV**"), including [***] BKV and/ or JCV or [***] BKV and/or JCV.

1.16 "**Calendar Quarter**" means each successive period of three (3) consecutive calendar months ending on the last day of March, June, September, or December, respectively; provided that, the final Calendar Quarter shall end on the last day of the Term.

1.17 "**CMO** shall have the meaning given in Section 6.1(a).

1.18 "**CMV**" means human cytomegalovirus and any naturally occurring variants thereof.

1.19 "**CMV-Specific CTL Product**" means any pharmaceutical or biologic product comprising CTLs Specifically Directed to one or more Targets associated with CMV, including any epitopes associated with CMV or expressed by a cell infected with CMV.

1.20 "**CMV [***]**" means any [***], in whole or in part, or in any form, with or without [***], and in any formulation, including without limitation any such [***] that is also a [***], for use for (a) [***], or any [***] infected with CMV, or (b) [***] CMV, or any epitopes associated with CMV or expressed by a cell infected with CMV, or the expression of CMV, in each case of (a) and (b), [***].

1.21 "**CMV [***] Program** " shall have the meaning given in Section 2.6(a).

1.22 "**Commercially Reasonable Efforts**" means, with respect to the efforts to be expended by a Party or its Affiliate with respect to any objective, activity or decision to be undertaken under this Agreement, those efforts that a well-resourced and financially stable company developing technology within the bio-pharmaceutical industry of comparable size and resources would reasonably use to accomplish such objective, activity or decision under similar circumstances, and specifically means the carrying out of development activities using efforts that a company developing technology within the bio-pharmaceutical industry of comparable size and resources would reasonably devote to a product at a similar stage in its development or commercial product life and of similar market potential, taking into consideration, among other factors, Third Party costs and expenses, including the royalties, milestone and other payments payable to Third Party licensors of patent or other intellectual property rights, and the pricing and reimbursement relating to the product, based on conditions then prevailing, efficacy, safety, approved labeling, the competitiveness of alternative products sold by Third Parties in the marketplace, the patent and other proprietary position of the product, and the likelihood of regulatory approval given the regulatory structure involved. Commercially Reasonable Efforts shall be determined on a Major Market-by-Major Market and Indication-by-Indication basis for Licensed Products being developed under the Research Agreement, and it is anticipated that the level of effort will change over time, reflecting changes in the status of each such Licensed Product, and the market(s) or country(ies) involved. Commercially Reasonable Efforts [***], that the Party [***]. For clarity, Commercially Reasonable Efforts will not mean that a Party guarantees that it will actually accomplish the applicable task or objective.

1.23 "**Comparable Third Party Product**" means, on a Licensed Product-by-Licensed Product basis, and a country-by-country basis, any pharmaceutical or biological product (a) that contains (i) an identical active ingredient(s) as a Licensed Product, or (ii) a "highly similar" active ingredient(s) as such Licensed Product, as the phrase "highly similar" is used in 42 U.S.C. § 262(i)(2), and subject to the factors set forth in FDA's Guidance for Industry, "Quality Considerations in Demonstrating Biosimilarity to a Reference Protein Product," (February 2012), at Section VI, and any successor FDA guidance thereto, (b) for which Regulatory Approval is obtained by reference to Regulatory Materials of such Licensed Product, (c) is approved for use in such country pursuant to a Regulatory Approval process governing approval of interchangeable or biosimilar biologics as described in 42 U.S.C. §§ 262, or an equivalent process for Regulatory

Approval in any country outside the United States, or any other equivalent provision that comes into force, or is the subject of a notice with respect to such Licensed Product under 42 U.S.C. § 262(l)(2) or any other equivalent provision that comes into force in such country, and (d) is sold in the same country as such Licensed Product by any Third Party that is not a Sublicensee of Licensee or its Affiliates and did not purchase such product in a chain of distribution that included any of Licensee or any of its Affiliates or its Sublicensees.

1.24 "**Competing Product**" means any CTL Product that is listed on Schedule 1.26. For clarity, any [***] shall be a Competing Product and (a) shall be subject to Section 2.6 during the [***] Option Period, and to Section 2.4 if the [***] expires without Licensee [***], and (b) if the [***] for the [***] shall automatically be added to Schedule 1.26 upon the exercise of the [***].

1.25 **"Confidential Information"** of a Party, means (a) information relating to the business, operations or products of a Party or any Affiliate of such Party, including any know-how, that such Party discloses, transfers or makes available to the other Party under this Agreement or the Research Agreement, or which otherwise becomes known to the other Party by virtue of this Agreement or the Research Agreement, in each case whether in written, oral, graphical, machine readable or other form, whether or not marked as confidential or proprietary, and (b) the terms of this Agreement and the Research Agreement;

1.26 "**Control**", "**Controls**" or "**Controlled**" means, with respect to any intellectual property rights or Confidential Information, the ability of a Party, itself or through an Affiliate of such Party, (whether through ownership or license (other than a license granted in this Agreement or the Research Agreement, as applicable) to grant to the other Party and/or its Affiliates, as applicable, the licenses or sublicenses as provided herein, or to otherwise disclose such intellectual property rights or Confidential Information to the other Party without violating the terms of any then-existing agreement with any Third Party or misappropriating such intellectual property rights or Confidential Information.

1.27 "**CTL**" shall have the meaning given in the first Recital.

1.28 "**CTL Product**" means a pharmaceutical or biologic product comprising Autologous CTLs or Allogeneic CTLs, in either case, Specifically Directed to one or more Targets associated with EBV, including [***] associated with EBV or expressed by a cell infected with EBV (an "**EBV-Specific CTL Product**"), including without limitation any [***] to two or more of any of the foregoing Targets.

1.29 "**CTL Technology**" means proprietary rights Controlled by Institute with respect to information, know-how, concepts, ideas, techniques and data that relate to Allogeneic CTLs and/or Autologous CTLs, including methods of manufacture or use of such Allogeneic CTLs and/or Autologous CTLs.

1.30 "**Data Exclusivity Protection**" means in a particular country with respect to a Licensed Product, any Law that prevents (notwithstanding any exceptions or provisos, save to the extent that such exceptions or provisos may be applied in the particular case) the use of, or reliance upon, clinical data generated by Licensee (or its Affiliate or Sublicensee) by a Third Party to obtain regulatory approval for a product, where such Third Party has not obtained the rights to market or sell such product as a licensee, sublicensee or distributor of Licensee or any of its Affiliates, licensees or Sublicensees with respect to such product.

1.31 "**Designated Executive Officers**" means the Chief Executive Officer of Licensee and the Director and Chief Executive Officer of Institute or such other senior executive officer of either Party notified in writing by such Party to the other Party from time to time.

1.32 "**Development Plan**" means the development plan provided by Licensee to Institute that provides the activities, and the associated estimated timelines of when such activities shall be conducted (including in detail the activities that shall be conducted in the calendar year following the submission of such Development Plan to Institute), in order to develop Licensed Products for commercialization.

1.33 "**Diagnostic Product**" means any test or assay for diagnosing or detecting a disease, disorder, medical condition, or symptom.

1.34 "**Dispute**" shall have the meaning given in Section 20.1.

1.35 "**Earned Royalty**" has the meaning set forth in Section 4.6.

1.36 "**EBV**" means Epstein-Barr Virus, also known as human herpes virus 4 and any naturally occurring variants thereof.

1.37 "**EBV Autologous Option**" shall have the meaning given in Section 2.2(a).

1.38 "**EBV-Specific Autologous Products**" shall have the meaning given in Section 2.2(a).

1.39 "**EBV [***]**" means any [***], in whole or in part, or in any form, with or without [***] and in any formulation, including without limitation any such [***] that is also a [***], for use for (a) [***] EBV, or any [***] associated with EBV or [***] with EBV, or (b) [***] EBV , or any [***] EBV, in each case or (a) or (b), [***].

1.40 "**EBV [***] Program**" shall have the meaning given in Section 2.6(a).

1.41 "**Existing Confidentiality Agreement**" shall have the meaning given in Section 22.2.

1.42 "**First Commercial Sale**" means, on a country-by-country basis, the first Sale of Licensed Product (or, solely with respect to Schedule 4.15, any [***] Product) in such country to a Third Party by the Licensee, or any of its Affiliates or Sublicensees (or, solely with respect to Schedule 4.15, by Institute, or any of its Affiliates, licensees or sublicensees pursuant to a [***] License Agreement), in each case after all Regulatory Approvals have been obtained in such country, if applicable.

1.43 "**First Patient First Dose**" or "**FPFD**" means the first dosing of the first patient in a clinical trial.

1.44 "**Governmental Authority**" means any court, agency, department, bureau, commissions, council, or other entity or instrumentality of any supra-national, federal, national, regional, state, provincial, or local or other political subdivision.

1.45 "**HPV-Specific CTL Product**" means a pharmaceutical or biologic product comprising Autologous CTLs or Allogeneic CTLs, in either case, Specifically Directed to one or more Targets associated with human papilloma virus ("**HPV**"), including [***] associated with HPV or [***] with HPV.

1.46 "**Indemnitee**" shall have the meaning given in Section 15.3.

1.47 "**Indication**" means any disease or condition, or sign or symptom of a disease or condition.

1.48 "**Infringement Notice**" shall have the meaning given in Section 14.1.

1.49 "[***]" shall have the meaning given in Section 4.4.

1.50 "**Institute Indemnitees**" shall have the meaning given in Section 15.1.

1.51 "**Issue Fee**" shall have the meaning given in Section 4.1(a).

1.52 "**JSC**" means the joint steering committee established pursuant to Article 3 of the Research Agreement.

1.53 "**Know-How Rights**" means the know-how and any supplemental information, including concepts, ideas, sequences, formulas, protocols, procedures, techniques and data (a) Controlled by Institute as of the Execution Date (including any of the foregoing Controlled by Institute as of the Original Effective Date, First Restatement Date, and/or Second Restatement Date), or (b) Controlled by Institute at any time during the Term and arising [***], or (c) Controlled by Institute and arising from activities conducted by either Party pursuant to the Research Agreement, in each case of (a) through (c), that (i) covers or relates to CTL Technology; and (ii) is not covered by a Valid Claim of the Patent Rights, or, if the subject of a patent or patent application in Patent Rights, does not issue as a Valid Claim.

1.54 "**Law**" or "**Laws**" means all applicable laws, statutes, rules, regulations, ordinances and other pronouncements having the binding effect of law of any Governmental Authority.

1.55 "**Licensed Field**" means therapeutic, palliative, prophylactic and diagnostic (including in relation to companion diagnostics) uses in all diseases and conditions and for all indications.

1.56 "**Licensed Method**" means any process, art or method the use or practice of which, but for the license granted in this Agreement, would infringe, or contribute to, or induce the infringement of, any Patent Rights in any country were they issued at the time of the infringing activity in that country.

1.57 "**Licensed Product(s)**" means any (a) CTL Product or New CTL Product or Program [***], including, without limitation, a CTL Product or New CTL Product or Program [***] for use or used in practicing a Licensed Method and any product made by practicing a Licensed Method, (b) a Diagnostic Product sold for use in connection with a CTL Product or New CTL Product or Program [***], or (c) any services provided using a CTL Product or New CTL Product or Program [***] set forth in (a), in each case of (a), (b) or (c) , where the manufacture, use, Sale, offer for Sale or import of which in a given country, (i) but for the license granted in this Agreement, would infringe, or contribute to, or induce the infringement of a Valid Claim of any Patent Rights in such country, (ii) would infringe, or contribute to, or induce the infringement of a Valid Claim of any Licensee Patents in such country, and/or (iii) would utilize the Know-How Rights. For clarity, Licensed Products include Allogeneic CTL Products and Autologous CTL Products, but subject to Section 2.6, do not include [***] unless and until Licensee [***].

1.58 "**Licensee Indemnitees**" shall have the meaning given in Section 15.2.

1.59 "**Licensee Patents**" means any and all patents or patent applications Controlled by Licensee that cover or claim inventions created, discovered, conceived, developed or reduced to practice in the course of activities conducted pursuant to the Research Agreement, including the following forms of intellectual property rights anywhere in the world that fall within the foregoing: (a) issued patents, continuations, continuations-in-part, divisionals, substitutions, confirmations, reissues, re-examination, validations, extensions, renewals, restorations or any similar governmental grant for protection of inventions; (b) pending applications for any of the foregoing (including both provisional and non-provisional applications); and (c) all patents and patent applications claiming priority directly or indirectly to any of the foregoing, or from which any of the foregoing claim direct or indirect priority, in each case including any joint interest in such rights held jointly with Institute.

1.60 "**Licensee [***] Development Plan**" shall have the meaning given in Section 5.2.

1.61 "**Major Markets**" means (a) the United States, and (b) [***] the following countries: France, United Kingdom, Italy, Germany and Spain.

1.62 "**Manufacturing Agreement**" shall have the meaning given in Section 6.1.

1.63 "**Milestone**" shall have the meaning given in Section 4.3(a).

1.64 "**Milestone Payment**" shall have the meaning given in Section 4.3(a).

1.65 "**MSK Agreement**" means the exclusive license agreement dated June 12, 2015, by and between Licensee and Memorial Sloan Kettering Cancer Center.

1.66 "[***]" shall have the meaning given in Schedule 2.1(a).

1.67 "[***]" means any product or service, where the manufacture, use, leasing transferring, providing, furnishing for use, sale, offer for sale or import of such product or service in a given country would infringe, or contribute to, or induce the infringement of a Valid Claim of any [***] in such country.

1.68 "**Net Sale**" means the amount invoiced by Licensee or by any Affiliate or Sublicensee for Sales of Licensed Products, after deduction of the following in accordance with U.S. Generally Accepted Accounting Principles ("**GAAP**") to the extent applicable to such Sales:

(a) trade, quantity and cash discounts or rebates, actually allowed or taken;

(b) allowances or credits given for rejection, recall or return of previously sold Licensed Product or outdated Licensed Product;

(c) rebates and chargebacks or retroactive price reductions made to federal, state or local governments (or their agencies), or any Third Party payor, administrator or contractor, including managed health organizations, to the extent specific to Licensed Product;

(d) payments required by law to be made under special medical assistance programs (including, but not limited to, payments made under Medicaid, Medicare or other government and other similar programs such as the new "Medicare Part D Coverage Gap Discount Program" and the "Annual Fee on Branded Pharmaceutical Manufacturers"), in each case to the extent specific to Licensed Product;

(e) amounts deemed to be uncollectible due to non-payment relating to Sales of Licensed Products during the applicable calculation period;

(f) any tax or other governmental charge (including without limitation custom surcharges) borne by and not reimbursed to the Licensee other than income tax levied on the Sale, transportation or delivery of Licensed Product; and

(g) any charges for packing, handling, freight, insurance, transportation and duty charges borne by the seller.

If Licensee makes any Net Sales to any Person at a price less than the regular price charged to other parties, and unless a cash discount within the meaning of this Section 1.68 applies, the royalties payable to Institute shall be computed on the basis of the regular price charged to other parties.

1.69 "**New CTL Products**" shall mean, for the purposes of this Agreement, pharmaceutical or biologic products comprising Autologous CTLs or Allogeneic CTLs Specifically Directed to Targets (including [***] associated with such Target or [***] with such Target) that are associated with any New Research Program that the Parties have agreed to include within the scope of this Agreement pursuant to Section 2.3 of the Research Agreement, including [***] the Target of such New Research Program. As of the Execution Date, New CTL Products shall include HPV-Specific CTL Products.

1.70 "**New Research Program**" shall have the meaning given in the Research Agreement.

1.71 "**New Research Patent Rights**" shall have the meaning given in Section 13.2(b).

1.72 "**New Research Program Inclusion Date**" shall have the meaning given in Section 13.2(b).

1.73 "**Option**" shall have the meaning given in Section 2.2(a).

1.74 "**Option Notice**" shall have the meaning given in Section 2.2(a).

1.75 "**Original Effective Date**" shall have the meaning given in the Recitals.

1.76 "**Original License Agreement**" shall have the meaning given in the Recitals.

1.77 "**Orphan Drug Exclusivity**" means in a particular country with respect to a Licensed Product, protection available under any Applicable Law relating to treatments for rare or neglected diseases or conditions, or otherwise requiring special incentives, that prevents or delays (notwithstanding any exceptions or provisos, save to the extent that such exceptions or provisos may be applied in the particular case) the approval, production, marketing or sale of a competitive product by a Third Party, where such Third Party has not obtained the rights to market or sell such product as a licensee, sublicensee or distributor of Licensee or any of its Affiliates, licensees or Sublicensees with respect to such product.

(a) "**Participant**" means any one or more of:[***]

1.78 "**Patent Rights**" means (a) any and all patents and patent applications Controlled by Institute as of the Execution Date (including all such patents and patent applications Controlled by Institute as of the Original Effective Date, the First Restatement Date, and/or the Second Restatement Date) that cover or claim CTL Technology and have arisen directly from activities conducted by or under the supervision of [***], including the patents and patent applications listed on Schedule 1.80, excluding any patents and patent applications included in subsection (b), (b) any and all patents or patent applications Controlled by Institute that cover or claim inventions created, discovered, conceived, developed or reduced to practice in the course of activities conducted pursuant to the Research Agreement, and (c) any and all patents and patent applications Controlled by Institute during the Term that have arisen directly from activities conducted by or under the supervision of [***] to the extent that such patents and patent applications cover or claim [***]. For clarity, Patent Rights include the following forms of intellectual property rights anywhere in the world that fall within (a), (b) and (c): issued patents, continuations, continuations-in-part, divisionals, substitutions, confirmations, reissues, re-examination, validations, extensions, renewals, restorations or any similar governmental grant for protection of inventions; (ii) pending applications for any of the foregoing (including both provisional and non-provisional applications); and (iii) all patents and patent applications claiming priority directly or indirectly to any of the foregoing, or from which any of the foregoing claim direct or indirect priority.

1.79 "**Person**" means any natural person, corporation, firm, business trust, joint venture, association, organization, company, partnership or other business entity, or any government or agency or political subdivision thereof.

1.80 "**Phase I Clinical Trial**" means any clinical study conducted on sufficient numbers of human subjects to establish that a pharmaceutical or biological product is reasonably safe for continued testing and to support its continued testing in Phase II Clinical Trials. "Phase I Clinical Trial" shall include without limitation any clinical trial that would satisfy requirements of 21 C.F.R. § 312.21(a).

1.81 "**Phase II Clinical Trial**" means any clinical study conducted on sufficient numbers of human subjects that have the targeted disease of interest to investigate the safety and efficacy of a pharmaceutical or biological product for its intended use and to define warnings, precautions, and adverse reactions that may be associated with such product in the dosage range to be prescribed. "Phase II Clinical Trial" shall include without limitation any clinical trial that would satisfy requirements of 21 C.F.R. § 312.21(b).

1.82 "**Phase III Clinical Trial**" means any clinical study intended as a pivotal study for purposes of seeking Regulatory Approval that is conducted on sufficient numbers of human subjects to establish that a pharmaceutical or biological product is safe and efficacious for its intended use, to define warnings, precautions, and adverse reactions that are associated with such product in the dosage range to be prescribed, and to support Regulatory Approval of such product or label expansion of such product. "Phase III Clinical Trial" shall include without limitation any clinical trial that would or does satisfy requirements of 21 C.F.R. § 312.21(c), whether or not it is designated a Phase III Clinical Trial.

1.83 "**Polyepitope CTL Product**" means any pharmaceutical or biologic product comprising an Autologous CTL or an Allogeneic CTL, in either case, that is Specifically Directed to at least two Targets.

1.84 "**Program [***]**" means any [***] developed in the course of the [***] Program, in respect of which Licensee has [***].

1.85 "**Regulatory Approval**" means with respect to a country or region, any and all approvals, licenses, registrations or authorizations of any Regulatory Authority necessary to commercially distribute, sell or market a Licensed Product in such country or region, including, where applicable: (a) pre- and post-approval marketing authorizations; (b) labeling approval; and (c) technical, medical and scientific licenses, in each case necessary for commercial distribution, sale or marketing of such Licensed Product in such country or region.

1.86 "**Regulatory Authority**" means any Government Authority or other entity, in each case regulating or otherwise exercising authority with respect to the development, manufacturing or commercialization of the Licensed Product in a given country or region, including the U.S. Food and Drug Administration ("**FDA**"), or any successor thereto, and the European Medicines Agency ("**EMA**"), or any successor thereto.

1.87 "**Research Agreement**" means the First Restated Research Agreement as in effect from the Original Effective Date until the Second Restatement Date, together with the Second Restated Research Agreement as in effect from the Second Restatement Date until the Execution Date, together with the Third Restated Research Agreement effective as of the Execution Date.

1.88 "**Research Agreement Patent Rights**" shall have the meaning given in Section 13.2(b).

1.89 "**Research Milestone Payments**" shall have the meaning given in the Research Agreement.

1.90 "**Reversion Product IP**" shall have the meaning given in Section 9.6(b).

1.91 "**Reversion Products**" shall have the meaning given in Section 9.6(b).

1.92 "**Royalty Term**" shall have the meaning given in Section 4.8(a).

1.93 "**Rules of Arbitration**" shall have the meaning given in Section 20.2.

1.94 "**Sale**" means the act of selling, leasing or otherwise transferring, providing, or furnishing for use any Licensed Product (or, solely with respect to Schedule 4.15, any [***] Product) for any consideration. Correspondingly, "Sell" means to make or cause to be made a Sale, and "Sold" means to have made or caused to be made a Sale. For clarity, a Sale excludes any Licensed Product supplied at cost: (a) for use in clinical trials; (b) for research or for other noncommercial uses; or (c) as part of a compassionate use program (or similar program for providing Product before it has received marketing approval in a given country).

1.95 "**Specifically Directed**" means, with respect to a Target, the ability of a molecule, agent, or compound to selectively or preferentially bind to or interact with such Target (other than by non-specific binding).

1.96 "**Sublicensee**" means any person or entity (including any Affiliate of Licensee) to which any of the license rights granted to the Licensee hereunder are granted a sublicense or an option to a sublicense.

1.97 "**Target**" means an antigen expressed on or in a cell, including [***]. For clarity, a Target may be [***] (collectively, a single "Target"). Unless otherwise specified, where the antigen is naturally occurring, a Target [***]. For clarity, (a) where a Licensed Product is [***] antigen expressed on or in a cell in association with [***] EBV and/or the virus associated with the Target of any New CTL Product and/or Program [***], and (b) where a Licensed Product is [***] associated with a [***] on or in a cell in association with the presence of, or infection of such cell by, EBV and/or the virus associated with the Target of any New CTL Product and/or Program [***], or [***] EBV and/or the virus associated with the Target of any New CTL Product and/or Program [***].

1.98 "**Term**" shall have the meaning given in Section 9.1.

1.99 "**Territory**" means worldwide.

1.100 "**Third Party**" means any Person other than Institute, Licensee or any of their respective Affiliates.

1.101 "**Third Party License**" shall have the meaning given in Section 4.7.

1.102 "**Third Party Product**" shall have the meaning given in Section 7.2.

1.103 "**Third Party Royalty Payments**" shall have the meaning given in Section 4.7.

1.104 "[***]" shall have the meaning given in Section 4.4.

1.105 "[***]" means [***].

1.106 "[***] **FPFD Date**" shall have the meaning given in Section 5.2.

1.107 "[***] **Option**" shall have the meaning given in Section 2.6(a).

1.108 "[***] **Option Notice**" shall have the meaning given in Section 2.6(e).

1.109 "[***] **Option Period**" shall have the meaning given in Section 2.6(a).

1.110 "[***] **Program [***] Account**" shall have the meaning given in Section 2.6(c).

1.111 "**Valid Claim**" means any (a) claim in an issued and unexpired patent included in the Patent Rights that has not been disclaimed, abandoned or withdrawn and has not been held unenforceable or invalid by a final judgment of a court or other governmental agency of competent jurisdiction from which no appeal can be or is taken, and has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise; (b) claim in a pending patent application included within the Patent Rights that has been filed in good faith and has not been abandoned or finally disallowed without the possibility of appeal or refiling, which application has been pending for less than [***] after its priority date; or (c) claim in a pending patent application included within the Patent Rights, which application has been pending for more than [***] after its priority date and which later becomes a claim in an issued and unexpired patent included in the Patent Rights as described in subsection (a), provided that for clarity, such claim shall be a Valid Claim only during the time period during which it otherwise falls within subsections (a) or (b).

1.112 "[***] **License**" shall have the meaning given in Section 4.4.

1.113 "[***]" shall have the meaning given in Section 4.4.

2. **GRANT**

2.1 **License Grant**. Subject to the limitations and other terms and conditions set forth in this Agreement including those reserved by Institute in Section 2.5(a), Institute hereby grants to Licensee an exclusive, royalty-bearing, sublicenseable (in accordance with Article 3) license in, to and under (a) the Patent Rights and the Know-How Rights, and (b) Institute's interest in any patents and patent applications owned jointly by Licensee and Institute, to make, use, Sell, offer for Sale and import Licensed Products, and to practice Licensed Methods, in each case with respect to (i) Allogeneic CTL Products in the Territory in the Licensed Field, (ii) solely with respect to HPV-Specific CTL Products , EBV-Specific Autologous Products, and Autologous CTL Products in the Licensed Field, and (iii) solely following [***] arising from the [***].

(a) **Assignment of Patents**. Licensee hereby assigns to Institute all of its right, title and interest to the patents and patent applications set forth in Schedule 2.1(a) attached hereto. Notwithstanding anything to the contrary in Article 13, from and after the Execution Date, Institute shall have the sole right, but not the obligation, at its cost, to prosecute, maintain and enforce each of the patents and patent applications set forth in Schedule 2.1(a). [***].

2.2 **Autologous CTL Option**.

(a) T he Parties hereby agree and acknowledge that Institute has granted to Licensee, and Licensee has exercised on written notice to Institute (the "**Option Notice** "), an option:

(1) to obtain an exclusive, royalty-bearing, sublicenseable (in accordance with Article 3) license in, to and under the Patent Rights and the Know-How Rights to make, use, Sell, offer for Sale and import Licensed Products, and to practice Licensed Methods, in each case with respect to Autologous CTL Products that are Specifically Directed to one or more Targets associated with EBV, including any [***] EBV or [***] with EBV (such products, "**EBV-Specific Autologous Products**"), in the Territory in the Licensed Field (such option, the "**EBV Autologous Option**" or the "**Option**").

(b) The Parties hereby agree and acknowledge that Licensee has paid the Option Fee to Institute pursuant to Section 4.2 and the license rights as described in Section 2.2(a)(1) , are fully effective, without further action either by Institute or by Licensee.

2.3 **Reversion of Certain Rights**. On a Target-by-Target basis, Major Market-by-Major Market basis, and Indication-by-Indication basis, if Licensee (a) ceases or determines that it will not pursue development or commercialization of an Allogeneic CTL Product for use in a given Indication under this Agreement or the Research Agreement, and (b) ceases or determines that it does not wish to pursue the development and commercialization of an Autologous CTL Product for use in such Indication, Section 7.3 shall apply.

2.4 **[***] Technology**.

(a) Subject to the terms and conditions of this Agreement, and the Research Agreement, during the Term, Licensee shall have an [***] under any intellectual property rights (i) Controlled by Institute or any Affiliate of Institute not included in the Patent Rights or the Know-How Rights, (ii) [***], (iii) that [***] or to [***], and (iv) that either Party [***] for the Parties' activities under this Agreement or the Research Agreement (the "[***] **Technology**"). For clarity, this Section 2.4 shall not apply to any [***] Technology that relates solely to [***], which shall be subject to Section 2.6 during the [***] Period, provided that if the [***] Period expires without Licensee exercising the [***], this Section 2.4(a) shall continue to apply, but Institute shall have no obligation under this Section 2.4 with respect to any such [***] Technology that relates solely to [***] arising from the [***] Program.

(b) With respect to any [***] Technology, Institute shall provide Licensee, prior to any discussion with any Third Party, with (i) detailed information regarding such [***] Technology, including such additional information as is reasonably requested by Licensee regarding any such [***] Technology in order to enable Licensee to appropriately evaluate such [***] Technology, and (ii) [***] arising from the use of such [***] Technology in the Territory. Licensee shall have a period of [***] following receipt of [***] to notify Institute whether Licensee wishes to exercise [***], and the Parties shall thereafter [***] to Licensee. If the Parties agree upon [***] in such period, they shall thereafter proceed to an [***] for such a grant of rights to be mutually agreed by the Parties. In the event that the Parties have not agreed upon the [***] pursuant to which the Parties would [***] in the Territory within such [***] period after the initiation of good faith discussions, Institute shall be free to discuss terms and conditions for the grant of rights, to develop and commercialize such CTL Products and/or New CTL Products in the Territory to any Third Party. Notwithstanding the foregoing, during [***] following the [***] Institute may [***] such a grant of rights with a Third Party, provided that Institute shall [***] Licensee during [***] (unless the Parties mutually agree to [***]), and provided further that [***], no [***] in the Territory shall be [***] such Third Party [***] with Licensee.

2.5 **Reservation of Rights**.

(a) Institute reserves and retains the right (and the exclusive rights granted to the Licensee in this Agreement shall be limited accordingly) to make, use and practice the Patent Rights and the Know-How Rights (and to grant any of the foregoing rights to other educational and non-profit institutions solely by way of a grant of rights pursuant to an academic collaboration agreement containing provisions substantially equivalent to those set forth in Schedule 2.5) entered into solely for educational and research purposes, including publication and other communication of any research results, but excluding any sponsored research performed for or on behalf of commercial entities, provided that any such rights granted under such academic collaboration agreements shall be subject to Sections 2.1, 2.4 and 11.2. Subject to the terms and conditions of this Agreement, Institute shall also retain all rights in and to the Patent Rights and the Know-How Rights for (i) all applications that do not directly relate to, or use or incorporate, CTLs, (ii) all uses or applications of CTLs for any Indication that is not associated with EBV and/or the Target associated with any New CTL Product and is not the subject of any activities being carried out under the Research Agreement, (iii) uses or applications of CTLs for use in any Indication for which an EBV-Specific CTL Product or a New CTL Product is being developed and/or commercialized pursuant to this Agreement or the Research Agreement, solely where such use or application of CTLs is in a patient or patients (A) that have been determined [***] (as applicable), and (B) that do not [***] associated with any [***] and/or the [***] associated with any [***] such uses or applications of CTLs, and (iv) [***], excluding any [***] included in the [***] Program, which shall be subject to Section 2.6, or any [***] that is also directed to the Target of any New Research Program.

(b) The Parties acknowledge and agree that Licensee retains the right to continue all development and commercialization activities under the MSK Agreement, including any development and commercialization of products that would be Competing Products, and Licensee's development and commercialization of products under the MSK Agreement shall not be a breach of Article 7.

(c) The Licensee acknowledges that the Institute has notified Licensee that Institute has, prior to the Original Effective Date, granted to each of the Participants an identical perpetual, irrevocable, nonexclusive royalty free license under the Patent Rights and related Know-How but excluding [***], in each case solely for internal research purposes, with a right to sublicense solely for internal research purposes with Institute's prior written consent, on terms to be agreed between the Institute and Participant, provided that Institute is not permitted to unreasonably withhold its consent to such a sublicense. Institute agrees that it will (i) provide Licensee with prompt written notice of any request by a Participant prior to any grant of such a sublicense, (ii) use its best efforts to ensure any such sublicense complies with Section 2.5(a), and (iii) at Licensee's request, provide Licensee with a copy of any such sublicense, which may be redacted to the extent not necessary to demonstrate compliance with Section 2.5(a).

2.6 **[***] Program**.

(a) Institute has been pursuing as of the Execution Date, and proposes to continue to pursue during the Term, certain programs of research and development relating to the [***] (the "[***] **Program**") and/or the [***] (the "[***] **Program**"). Subject to the remainder of this Section 2.6, Institute hereby grants to Licensee an [***] for the [***] Program (the "[***]"), exercisable at any time prior to the earlier of (i) the [***] arising out of the [***] Program, and (ii) the decision by Institute to [***] (the "[***] **Period**"), to include [***], arising from the [***] Program as Licensed Products pursuant to this Agreement. For the purposes of determining the duration of the [***] Period, [***] shall mean the [***]. The Parties acknowledge and agree that the [***] Option for the CMV [***] Program as described in the First Restated Agreement has terminated effective as of the Execution Date and that the CMV [***] Program (and Licensee's obligation to fund the CMV [***] Program) will continue solely as expressly set forth in the Second Restated Research Agreement.

(b) In order to retain the right to [***] during the [***], Licensee shall [***] commencing on the Execution Date and during the remainder of the [***] Period in the form of the [***] Contribution, in accordance with a mutually agreed [***] Programs Development Plan and [***] Program Budget, as set forth in Section 2.6(e) and (f) of the Research Agreement. Licensee may terminate the [***] at any time during the [***] Period by [***] written notice to Institute. Following notice of termination of the [***], Licensee shall remain responsible for [***] for activities that are [***] for which the [***] has been terminated during such termination notice period, provided that [***] by Institute during the termination notice period. Licensee shall also be responsible for [***] associated with the termination of the [***] , if any. For clarity, any failure by Licensee to pay the [***] Contribution (unless disputed in good faith by Licensee) within the timeframe set forth in Section 2.6(d) [***] and upon written notice from Institute to Licensee shall [***] for the [***] Program.

(c) The [***] Contribution shall be payable by Licensee as follows: (i) no later than [***] during the [***] Period, Institute will present to Licensee an [***] that Institute [***] during that [***] (the "[***] **Program [***] Account**"); (ii) provided that the amount of the [***] Program [***] Account does not exceed [***] of the amounts set forth in the [***] Budget, Licensee shall, pay the amounts set forth in the [***] Program [***] Account within [***] of receipt of such account. Any amounts paid towards the [***] Contribution shall be [***] made or payable by Licensee under this Agreement, provided that any [***] set forth in the [***] Program [***] Account will be adjusted in subsequent [***] Program [***] Accounts against actual costs and committed costs incurred by Institute in conducting the [***] Program.

(d) If Licensee fails to make a payment of any undisputed amount included within the [***] Program [***] Account within thirty (30) days following the due date Licensee's right to exercise the [***] with respect to the [***] Program shall terminate. Licensee may dispute any amount charged in good faith by written notice to Institute, and the Parties shall promptly meet following any such notice to discuss and resolve any such dispute in good faith.

(e) Licensee may exercise the [***] by giving written notice to Institute at any time during the [***] Period (the "[***] **Notice**") and paying the [***] Fee in accordance with Section 4.2(b). Upon receipt of the [***] Option Notice and the [***] Fee, [***], arising from the [***] Program will be included as Licensed Products pursuant to this Agreement, and the [***] Program shall thereafter be subject to the terms and conditions of this Agreement, including the milestone payments due under Section 4.3, and the royalty obligations set forth in Section 4.6 set forth in the column entitled "Licensed Product that is a Program [***] Arising from the [***] Program" in the table in such Section, that are applicable to Licensed Products arising from the [***].

(f) If Licensee does not exercise a [***] for the [***] Program during the [***] Period, or if the [***] is terminated by Licensee pursuant to Section 2.6(b), then subject to the rights granted to Licensee under this Agreement, including the licenses granted in Section 2.1, and to subsection (g) below, all rights of Licensee under the [***] Program for which the [***] has not been exercised (or for which the [***] has been terminated, as applicable) shall terminate, and Institute shall thereafter have no further obligations to Licensee with respect to the [***] Program.

(g) Notwithstanding subsection (f), following either (i) the expiration of the [***] Period without exercise of the [***] by Licensee for the [***] Program, (ii) termination by Licensee of the [***] for the [***] Program or (iii) at any time with respect to the [***] Program, as set forth below, if Institute grants rights to any Third Party to develop or commercialize any product (including any [***]) arising from the [***] Program, Institute shall [***] under any agreement for the grant of such rights, until [***] with respect to the [***] Program for which rights have been granted to such Third Party and (ii) with respect to the [***]. For clarity, Licensee may terminate the [***] Option by (A) the giving of [***] written notice to Institute in accordance with Section 2.6(b), or (B) written notice in the event of (1) any issue relating to the safety or efficacy of the [***], or (2) [***] applicable to the development and commercialization of the [***], or (3) [***].

(h) For the purposes of this Section 2.6, "[***] **Development Costs**" shall mean the [***] costs incurred ([***]) by Institute in conducting the [***] Program, provided that (i) [***] Development Costs shall also include [***] Program) associated with the [***] Program, which shall be mutually agree by the Parties and set forth in the [***] Budget, and (ii) [***] set forth in the Research Agreement.

2.7 **No Other Rights**. Each Party acknowledges that the rights and licenses granted in this Agreement are limited to the scope expressly granted. Accordingly, except for the rights expressly granted under this Agreement, no right, title, or interest of any nature whatsoever is granted whether by implication, estoppel, reliance, or otherwise, by either Party to the other Party. All rights with respect to any know-how, patent or other intellectual property rights that are not specifically granted herein are reserved to the owner thereof.

3. **SUBLICENSES**

3.1 **Permitted Sublicensing**. Institute grants to the Licensee the right to sublicense, in whole or in part, as follows: (a) Licensee shall have the right to sublicense the Patent Rights and the Know-How Rights within the Territory in the Licensed Field solely to Licensee's Affiliates and subcontractors performing work on behalf of Licensee; and (b) Licensee shall have the right to sublicense the right to make, use, sell, offer for sale and import Licensed Products within the Territory in the Licensed Field through multiple tiers. The term Sublicense shall include any grant of rights under this Agreement by a Sublicensee to any downstream Third Party, such downstream Third Party shall also be considered a Sublicensee for purposes of this Agreement.

3.2 **Sublicense Requirements**. The Licensee shall (a) provide Institute with a copy of each sublicense issued within thirty (30) days after the execution of such sublicense; (b) collect payment of all payments due to Institute from Sublicensees through Licensee arising from Sales of Licensed Products; and (c) summarize and deliver all reports due Institute from Sublicensees through Licensee.

3.3 **Sublicense Terms**. Each Sublicensee must be subject to a written sublicense agreement containing all terms of the sublicense, which shall include at least the following terms and conditions:

(a) record keeping, audit and reporting obligations substantially equivalent to those set forth in Sections 8.1 and 8.2 of this Agreement, sufficient to enable Licensee and Institute to reasonably verify the payments due to Licensee and Institute under such Sublicense and to reasonably monitor such Sublicensee's progress in developing and/or commercializing Licensed Product, including the right for Institute (or its designee) to perform a direct audit of Sublicensee's books and records on terms no less stringent than those set forth in Section 8.2 of this Agreement;

(b) infringement and enforcement provisions that do not conflict with the restrictions and procedural requirements imposed on Licensee and do not provide greater rights to Sublicensee than as provided in Article 14;

(c) confidentiality provisions with respect to Confidential Information of Institute consistent with the restrictions on Licensee in Article 22 of this Agreement;

(d) a requirement of indemnification of Institute by Sublicensee that is equivalent to the indemnification of Institute by Licensee under Section 15.1 of this Agreement; and

(e) a requirement of obtaining and maintaining insurance by Sublicensee that is equivalent to the insurance requirements of Licensee under Section 15.4 of this Agreement.

Any Sublicense that does not include all of the terms and conditions set forth in this Section 3.3 or which is not issued in accordance with the terms and conditions set forth in this Article 3, shall be considered null and void with no further notice from Institute.

3.4 **Effect of License Termination**. Upon termination of this Agreement for any reason, all sublicenses that are granted by Licensee pursuant to this Agreement will remain in effect and will be assigned to Institute, provided that the Sublicensee is in compliance with its sublicense agreement as of the date of such termination, and except that Institute will not be bound to perform any duties or obligations set forth in any sublicenses that extend beyond the duties and obligations of Institute set forth in this Agreement. Institute will have the sole right to modify each such assigned sublicense to include all of the rights of Institute that are contained in this Agreement.

4. FINANCIAL PROVISIONS

4.1 Issue Fee.

(a) As initial payment for the rights received under this Agreement with respect to CTL Products, Licensee paid to Institute a fixed fee of three million dollars ($3,000,000) (the "**Issue Fee**") within fifteen (15) business days following the Original Effective Date. The Issue Fee is non-refundable and non-creditable against any other amounts, including but not limited to, Earned Royalties due to Institute by Licensee. The Issue Fee is in no way contingent on use or productivity of Patent Rights and Know-How Rights provided by Institute.

(b) As initial payment for the rights received under this Agreement with respect to BKV/JCV-Specific CTL Products, Licensee paid to Institute a fixed fee of [***] (the "**BKV/JCV Issue Fee**") within fifteen (15) business days following the First Restatement Date. The BKV/JCV Issue Fee is non-refundable and non-creditable against any other amounts, including but not limited to, Earned Royalties due to Institute by Licensee. The BKV/JCV Issue Fee is in no way contingent on use or productivity of Patent Rights and Know-How Rights provided by Institute.

4.2 Option Fees.

(a) Each Party acknowledges that Licensee has previously delivered an Option Notice for the EBV Autologous Option and has paid to Institute a fee of [***] (the "**Option Fee** "). The Option Fee is nonrefundable and non-creditable against any other amounts once paid and is not in any way contingent on use or productivity of the underlying technology and know-how related to the EBV Autologous Option.

(b) Within ten (10) days following Licensee's delivery of a [***] Notice for the [***] Program, Licensee shall pay to Institute a fee of [***] (the "[***] **Fee** "). The [***] Fee is non-refundable and non-creditable against any other amounts once paid and is not in any way contingent on use or productivity of the underlying technology and know-how related to the [***] Program.

4.3 **Milestone Payments**.

(a) As additional consideration for Institute entering into this Agreement and the Research Agreement, Licensee will pay to Institute the milestone payments (each, a "**Milestone Payment**") set forth in the table below for each Allogeneic Licensed Product and/or Autologous Licensed Product (as applicable pursuant to the table set forth below) to achieve the corresponding milestone (each, a "**Milestone**"), whether achieved by Licensee or an Affiliate or Sublicensee. Licensee shall promptly notify Institute in writing of the achievement of any such Milestone and Licensee shall pay Institute in full the corresponding Milestone Payment within [***] of such achievement. For clarity, each Milestone Payment is payable once only for each Allogeneic CTL Product and once for each Autologous CTL Product, and each Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute.

		Milestone Payment		
Milestone Trigger Event		**Licensed Product Specifically Directed to [***]**	**Licensed Product Arising [***] Activities under Research Agreement**	**[***]**
1	First calendar year in which worldwide annual Net Sales of Product [***]	[***]	[***]	[***]
2	First calendar year in which annual Net Sales of Product [***]	[***]	[***]	[***]
3	First calendar year in which annual Net Sales of Product [***]	[***]	[***]	[***]

(b) Unless a Milestone Payment is specified as payable for more than one Indication in the table above, each Milestone Payment will be payable by Licensee only once, following the first time a given Licensed Product achieves the specified Milestone, for each Allogeneic CTL Product and each Autologous CTL Product to achieve such Milestone.

(c) Each time a Milestone is achieved, then any other Milestone Payments with respect to earlier Milestones that have not yet been paid will be due and payable together with the Milestone Payment for the Milestone that is actually achieved.

(d) If Licensee, with respect to a given Licensed Product and a given Indication, elects to progress the development and commercialization of an Autologous CTL Product in lieu of an Allogeneic CTL Product for such Indication, then (i) following the decision to progress development and commercialization of such Autologous CTL Product, Licensee shall owe all subsequent Milestone Payments due for such Autologous CTL Product, and (ii) subsection (c) shall apply solely with respect to any Milestone Payments that are applicable to both Autologous CTL Products and Allogeneic CTL Products, and have not already been paid for the Allogeneic CTL Product.

4.4 **Milestone Offset**. If Licensee reasonably believes, on the advice of legal counsel, that it is necessary to obtain a license (or a sublicense) from any Third Party under (a) any patents or patent applications owned or otherwise controlled by a Third Party that claim or cover the [***], including without limitation any specific constructs or variants of such [***], wherever originating, including without limitation any such patents or patent applications owned or otherwise controlled by [***] and/or the [***] (the "[***]"), and/or (b) any patents or patent applications having a priority date [***] owned or otherwise controlled by any [***] in order to develop, make, have made, use, Sell, offer for Sale or import any Licensed Product (such licenses, each an "**Additional License**"), and pursuant to such Additional License is required to pay any consideration ([***]) to such Additional Party for development and commercialization of such Licensed Product ("**Additional License Payments**"), then Licensee may offset [***] paid to such Additional Party against [***] payable to Institute under this Agreement or [***] payable to Institute under [***] under this Agreement in relation to such Licensed Product or [***] in relation to such Licensed Product after the effective date of such Additional License, [***], provided that Licensee may not offset any Additional License Payments due under the [***] for all Licensed Products in aggregate (the "[***] "). For clarity, Licensee's right to offset Additional License Payments under any Additional License falling within (b) shall be subject to [***]. Notwithstanding the foregoing, in no event shall the offset of Additional License Payments exceed [***], as applicable, and [***] due to Institute under this Agreement and the Research Agreement. Any Additional License Payments ([***] in excess of such [***] may be [***] by Licensee and [***], provided that no offset may be taken by Licensee against [***] prior to the effective date of such Additional License.

4.5 **Royalties**. Subject to Section 4.4, Earned Royalties will accrue on a Licensed Product-by-Licensed Product basis and country-by-country basis, for the duration of the Royalty Term and will be payable to Institute when Licensed Products are invoiced, or if not invoiced, when delivered or otherwise exploited by the Licensee, its Affiliate or Sublicensee in a manner constituting a Sale.

4.6 **Earned Royalty**. As further consideration for the rights granted under this Agreement and activities agreed under this Agreement and the Research Agreement, Licensee will pay to Institute the following earned non-refundable, non-creditable royalty on Net Sales of Licensed Products ("**Earned Royalty**"):

	Royalty Percent		
Aggregate Annual Net Sales	**[***] CTL Products**	**Licensed Products Arising [***] under the Research Agreement**	**Licensed Product that is a [***] Program**
Portion less than [***]	[***]	[***]	[***]
Portion greater than or equal to [***]	[***]	[***]	[***]

Notwithstanding the foregoing, for any Licensed Product that is a Diagnostic Product, the Earned Royalty shall be [***] of the royalty rates set forth in the table above.

4.7 **Royalty Offset**. If Licensee [***], that it is necessary to obtain a license under patents or patent applications Controlled by a Third Party (a "**Third Party License**") in order to develop, make, have made, use, Sell, offer for Sale or import any Licensed Product, and pursuant to such Third Party License is required to pay royalties to such Third Party ("**Third Party Royalty Payments**"), then Licensee may deduct [***] of all royalties paid to such Third Party against the Earned Royalty owed to Institute, up to a limit of [***] of the applicable Earned Royalty in any given calendar year. Any Third Party [***] Payments in excess of such [***] limit for a given calendar year [***].

4.8 **Royalty Term**.

(a) Subject to the remainder of this Section 4.8, the Earned Royalty will be payable, on a Licensed Product-by-Licensed Product basis, and on a country-by-country basis, from the date of First Commercial Sale of such Licensed Product in such country until the last to occur of the following: (i) expiration or abandonment of the last Valid Claim of (A) any of the Patent Rights existing as of the Original Effective Date that cover or claim [***] such Licensed Product in such country, (B) any patent or patent application included in the Patent Rights following the Original Effective Date that arises as a result of the Parties' activities conducted pursuant to the Research Agreement, or (C) any [***]; (ii) cessation of any Data Exclusivity Protection or Orphan Drug Exclusivity applicable to such Licensed Product in such country; or (iii) the tenth (10th) anniversary of the First Commercial Sale of such Licensed Product in such country (the "**Royalty Term**").

(b) Notwithstanding the foregoing, if in a country, (i) neither of the events set forth in Section 4.8(a)(i) and/or Section 4.8(a)(ii) have occurred in relation to such Licensed Product, (ii) one or more Comparable Third Party Products for such Licensed Product have been sold in such country for a period of [***], (iii) such Comparable Third Party Products do not infringe any Valid Claim of the [***], Licensee is [***], and (iii) following such [***] period, Net Sales during [***] Calendar Quarters in such country are [***] for the [***] Calendar Quarters, the Earned Royalty will be reduced thereafter to [***] of the amounts set forth in the table in Section 4.6 above (following any offsets applicable under Section 4.7). Furthermore, if in a country, at any time prior to the [***] anniversary of the First Commercial Sale of such Licensed Product, [***] set forth in Section 4.8(a)(i) and/or Section 4.8(a)(ii) have occurred in relation to such Licensed Product, the Earned Royalty will be reduced thereafter to [***] of the amounts set forth in the table in Section 4.6 above (following any offsets applicable under Section 4.7).

(c) Following the expiration of the Royalty Term, all licenses granted to Licensee hereunder shall become perpetual, exclusive and fully paid-up.

4.9 **Royalty Payment Schedule**. The Licensee will pay to Institute all Earned Royalties payable to Institute quarterly on or before February 28 (for the Calendar Quarter ending December 31), May 31 (for the Calendar Quarter ending March 31), August 31 (for the Calendar Quarter ending June 30) and November 30 (for the Calendar Quarter ending September 30) of each calendar year. Each payment will be for Earned Royalties accrued within the Licensee's most recently completed Calendar Quarter.

4.10 **Currency**. All consideration due Institute will be payable and will be made in United States dollars by wire transfer to an account designated by Institute. When Licensed Products are Sold for monies other than United States dollars, the Earned Royalties and other consideration will first be determined in the foreign currency of the country in which such Licensed Products were Sold and then converted into equivalent United States dollars. The exchange rate will be the average exchange rate quoted in *The Wall Street Journal* for the purchase of United States dollars during the last thirty (30) days of the reporting period.

4.11 **Royalty Reports**. Beginning with the First Commercial Sale of an Licensed Product, within [***] following the end of each Calendar Quarter, Licensee shall make quarterly royalty reports to Institute on or before each February 28, May 31, August 31 and November 30 of each year. Each royalty report will cover the Licensee's most recently completed Calendar Quarter and will show: (i) the amount invoiced for Sales and Net Sales of Licensed Products that are Sold during the most recently completed calendar quarter; (ii) the [***] Licensed Product that is Sold on a country by country basis; (iii) the Earned Royalties, in U.S. dollars, payable with respect to Sales of Licensed Products; (iv) the [***] Earned Royalty; (v) a [***] to calculate Net Sales; and (vi) the exchange rates used.

4.12 **Taxes**. Earned Royalties on Net Sales of Licensed Products and other consideration accrued in, any country outside the United States may be reduced by any taxes, fees or other charges imposed by the government of such country, including those taxes, fees and charges allowed under the provisions of the definition of "Net Sales" in Article 1.

4.13 **Late Payments**. If Earned Royalties, fees, reimbursements for Patent Prosecution Costs or other monies owed to Institute are not received by Institute when due, the Licensee will pay to Institute interest at a rate of the lesser of: (a) [***], or any successor thereto, at 12:01 a.m. on the first day of each Calendar Quarter in which such payments are overdue or (b) the maximum rate permitted by Law. Such interest will be calculated from the date payment was due until actually received by Institute.

4.14 **Acknowledgement**. The Parties acknowledge that the payments required to be made by Licensee to Institute under this Agreement are in consideration of all rights granted to Licensee and obligations undertaken by Institute under this Agreement. Such granted rights include use of valuable Know-How Rights, and the right to participate in the JSC and the conduct of the Development Plan so as to discover or develop Licensed Products that may not be, or may cease to be, covered by (a) Patent Rights, (b) Data Exclusivity, or (c) Orphan Drug Exclusivity. Each Party expressly acknowledges that it is their intention that royalties and other consideration be paid in accordance with the terms of this Agreement, and during the periods set forth in this Agreement, notwithstanding that a Licensed Product may be royalty-bearing at a reduced rate pursuant to Section 4.8(b) in the absence of coverage by (i) Patent Rights, or after the expiration of such Patent Rights, or (ii) Data Exclusivity, or (iii) Orphan Drug Exclusivity.

4.15 **[***] Fees**. As further consideration for the rights granted and payments received by Institute under this Agreement, Institute agrees to pay to Licensee the [***] Fees as set forth on Schedule 4.15.

5. DILIGENCE; REGULATORY ACTIVITIES

5.1 **General Diligence**. Licensee, following execution of this Agreement, will use Commercially Reasonable Efforts to proceed with the development, manufacture and Sale of Licensed Products [***] in the Territory. Without limiting the following, unless otherwise agreed by the Parties in a writing that specifically references these obligations, Licensee shall:

(a) [***];

(b) [***]; and

(c) [***];

provided that, if Licensee's failure to meet the applicable diligence obligation under Section 5.1(b) to Section 5.1(c) is the result of (i) Institute's failure to perform its obligations in accordance with (A) the Research Agreement and the Development Plan (including any timelines set forth therein), or (B) any Manufacturing Agreement entered into by the Parties, or (ii) additional development activities (including any changes to manufacturing process or activities) required by the FDA in order to obtain regulatory approval for a Licensed Product, then in each case the target timeframe to meet the diligence requirements set forth in Section 5.1(b) to Section 5.1(c), as applicable, shall be [***], to complete the required activities. The Parties agree and acknowledge that Licensee has met its diligence obligation as set forth in Section 5.1(a).

5.2 **Specific Diligence for [***] Program**. Following exercise of the [***] for the [***], Licensee will use Commercially Reasonable Efforts to proceed with the development, manufacture and Sale of Licensed Products that [***] in the [***] in the Territory. Within [***] for the [***] Program, Licensee shall provide Institute with a reasonably detailed development plan for the further development of the [***], through to Regulatory Approval (the "**Licensee [***] Development Plan**"). Following Licensee's delivery of the Licensee [***] Development Plan to Institute, the Parties shall discuss and mutually agree upon the date upon which Licensee will be required to [***] occurring after exercise of the [***] for the [***] Program (the "[***] **Date**"). The [***] Date, once mutually agreed by the Parties or determined pursuant to Article 20 as described below, shall be executed by each Party and thereupon constitute an additional diligence obligation for Program [***] arising from the [***] Program equivalent to the diligence obligations set forth in Section 5.1(a) through (c) for CTL Products arising from the Research Collaboration and be deemed to be a part of this Agreement. If the Parties are unable to agree on the [***] Date within [***] after Licensee's delivery of the Licensee [***] Development Plan to Institute, then such dispute shall first be escalated to the Executives for resolution in accordance with Section 20.1, and if not resolved within the time period set forth therein, each Party shall, [***] following the expiration of the time period for the Executive resolution under Section 20.1, [***] Date shall be [***].

5.3 **Governance**. The Parties' activities under this Agreement and the Research Agreement shall be overseen by the JSC, as further set forth in Article 3 of the Research Agreement. In the event that the Research Agreement is terminated or expires, the JSC will remain in place and continue to operate as set forth in the Research Agreement to the extent applicable to activities under this Agreement, including with respect to each Party's final decision making authority as set forth in Section 3.3(f) of the Research Agreement. For the avoidance of doubt, the exercise of such authority by Licensee shall in no way define, affect or diminish the diligence obligations of Licensee hereunder.

5.4 **Progress Reports**. On a [***] basis, but in any event no later than June 1st and December 1st in each calendar year, as long as Licensee continues to develop and commercialize Licensed Products, Licensee will submit a written report to Institute covering the Licensee's (and any of its Affiliates' or Sublicensees') activities related to this Agreement, including any updates or amendments to the Development Plan and activities being conducted pursuant to the Research Agreement (each, a "**Progress Report**"). The report will include information reasonably sufficient to enable Institute to ascertain progress by Licensee toward meeting this Agreement's diligence requirements set forth in Section 5.1. Each report will describe, where relevant: (a) current schedule of anticipated events or milestones; (b) summary of work completed and in progress, including against the Development Plan, during such period; (c) summary of work in progress and progress toward commercialization of Licensed Products; (d) significant corporate transactions involving Licensed Products, including any Sublicenses granted. Licensee shall include in each Progress Report the date of First Commercial Sale of any Licensed Product in each country, as applicable.

5.5 **Regulatory Activities**.

(a) Licensee shall be solely responsible, at Licensee's expense for filing, obtaining and maintaining all Regulatory Approvals required for the development and commercialization of Licensed Products anywhere in the Territory where Licensed Products are manufactured, used, Sold, offered for Sale or imported. Licensee will obtain all such Regulatory Approvals in its own name (or that of a Licensee Affiliate) and shall own all right, title and interest in and to such Regulatory Approvals, and all materials, data and information included therein and relating thereto. Notwithstanding the foregoing, and subject to the terms and conditions of the Research Agreement, Institute shall be responsible for obtaining any Regulatory Approvals required for any clinical trials conducted by Institute or any Affiliate under the Research Agreement, provided that Institute shall provide Licensee with copies of all such fillings and correspondence relating thereto, and Licensee shall have a right of reference to all data, materials and information contained in any such regulatory filings and Regulatory Approvals.

(b) Institute shall transfer to Licensee all of the data and information Controlled by Institute and arising from (i) the activities under the Research Agreement, or (ii) activities conducted by or under the supervision of [***] prior to the date of the [***], in each case that is necessary or useful for the development, manufacturing and commercialization of EBV-Specific Autologous Products.

5.6 **Abandonment**. If Licensee decides to abandon, or does in fact abandon, on a Licensed Product by Licensed Product and Major Market-by-Major Market basis the development or commercialization of Licensed Products (including an [***], solely following the [***]), then Licensee shall forthwith notify Institute in writing and Institute shall have the right to terminate this Agreement, solely with respect to the Major Market(s) in which such abandonment has taken place, upon written notice to Licensee in relation to such Licensed Product(s) and Major Market(s). A suspension of a New Research Program or other activities related to the development or commercialization of a Licensed Product shall be deemed to be abandonment if Licensee does not have a good-faith intention to continue development and commercialization of such Licensed Product. Upon such termination, any such Licensed Products shall be deemed Reversion Products (as defined in Section 9.6(b)), and Section 9.7 shall apply. Promptly following such notice of termination, the Parties shall meet to discuss in good faith and agree upon the process for transitioning to Institute the rights to commercialize such Licensed Product in the applicable Major Markets, and to coordinate the ongoing development and commercialization of such product in such terminated Major Market, including the sharing of information, regulatory filings and data relating thereto.

6. MANUFACTURE AND SUPPLY

6.1 The Parties are parties to and intend to enter into one or more agreements that will govern the terms of manufacture and supply of CTL Products and New CTL Products and Program [***], including specific [***] Products for clinical supply for use in development activities, including clinical trials to be conducted by each Party pursuant to the Development Plan and under the Research Agreement (each, a "**Manufacturing Agreement**"). As of the Execution Date, the Parties anticipate that any such additional Manufacturing Agreement shall incorporate commercially reasonable terms that are appropriate for a similarly situated manufacturing agreement, and shall include at least the following principles, as set forth below in Sections 6.1(a) through (d), and other material terms such as pricing, as the Parties shall mutually agree upon:

(a) Institute shall be responsible for the manufacture and supply of CTL Products and New CTL Products and Program [***] (including specified [***] Products) for clinical supply through to [***] (which may include, subject to mutual agreement of the Parties, [***]), itself or through an Affiliate or mutually-agreed upon Third Party contract manufacturing organization ("**CMO**"). The costs applicable to such manufacturing activities will be set forth in the Development Plan under the Research Agreement.

(b) Institute's obligation to manufacture and supply as set forth in Section 6.1(a) shall be conditioned on (i) the manufacturing entity shall have all Regulatory Approvals required for manufacture of Licensed Products for clinical supply, and (ii) the manufacturing entity shall have appropriate production capacity (including the ability to scale up as required) for the applicable CTL Products and New CTL Products and Program [***] to meet the timelines and specifications provided by Licensee for Licensed Product for clinical development.

(c) The Parties shall discuss in good faith the arrangements for the manufacture and supply of Licensed Products for clinical development activities following completion of Phase I Clinical Trials and for commercialization of Licensed Products in the Territory, including the selection of an appropriate manufacturing entity, which may include without limitation, either Party or its Affiliates, or a mutually agreed Third Party CMO. If Licensee requests that Institute continue to perform manufacturing and supply activities for Licensed Products hereunder, then Institute shall, subject to negotiation and agreement on the terms of the Manufacturing Agreement, manufacture and supply such Licensed Products to Licensee, with the further terms of such manufacture and supply to be set forth in the Manufacturing Agreement.

(d) The Parties acknowledge and agree that for the purposes of facilitating the manufacture and supply of Licensed Products to support the Parties' activities under this Agreement and the Research Agreement, including for reasons related to regulatory requirements or cost-effectiveness and economies of scale of production, Licensee may elect, or it may be necessary for the Parties to transfer manufacturing and supply to a different Third Party CMO, or to a different facility. Each Party agrees that with respect to any transfer of manufacturing technology, it will provide reasonable assistance to the other Party, at such other Party's reasonable expense and subject to such arrangements as are necessary to protect confidential information and proprietary know-how, to effect such transfer in a timely fashion and without undue disruption to the manufacture and supply of the applicable Licensed Product(s).

7. CERTAIN COVENANTS

7.1 **General Rule**. Subject to Section 7.2, during the period beginning on the Original Effective Date and ending on the expiration or earlier termination of this Agreement, neither Party shall (directly or indirectly, and either with or without a bona fide collaborator) conduct outside the scope of this Agreement, or the Research Agreement, any programs that are intended to identify, optimize, develop or commercialize a Competing Product.

7.2 **Exception for Certain Third Party Products**. Notwithstanding Section 7.1, during the Term, Licensee may acquire or in-license from a Third Party (a) rights in technology (including rights in patents, patent application and/or know-how) that Licensee [***] to the Patent Rights and Know-How Rights licensed by Institute to Licensee hereunder and are necessary or useful for the development and commercialization of Licensed Products hereunder, and/or (b) rights to develop and commercialize a CTL Product or New CTL Product or Program [***] that [***] (a "**Third Party Product**") if Licensee [***] that such [***] by Licensee or Institute (including any such Third Party Product [***], including without limitation because such Third Party Product (a) [***] then under development, (b) [***] then under development, and/or (c) [***] then under development by Licensee. Licensee may negotiate the terms of such a Third Party license or other agreement at its sole discretion. Notwithstanding the foregoing, if Licensee acquires rights in such a Third Party Product, Licensee shall [***] the development and commercialization of such Third Party Product pursuant to [***], for the Term of this Agreement, provided that if such Third Party Product is [***] pursuant to the foregoing shall be [***] of the amounts that [***].

7.3 **Autologous CTL Programs**. On an Indication-by-Indication basis, Licensee shall notify Institute in writing within [***] following Licensee's determination that Licensee (a) will not pursue development or commercialization of an Allogeneic CTL Product for use in a given Indication under this Agreement or the Research Agreement, and (b) does not wish to pursue the development and commercialization of an Autologous CTL Product for use in such Indication. Provided that such Indication is not the subject of an existing research and development Program under the Research Agreement, Institute shall have the right to develop and commercialize Autologous CTL Products for use in such Indication without such development and commercialization being a breach of this Article 7, and the license granted to Licensee pursuant to Section 2.2 with respect to Autologous CTL Products shall no longer apply to any Autologous CTL Product for use in such Indication. Without limiting the foregoing, the Parties shall discuss, at least annually through the JSC, whether Licensee intends to, or is continuing to pursue development or commercialization of an Allogeneic CTL Product for use in the Indications that are the subject of research and development activities pursuant to the Research Agreement. Licensee will provide such information regarding its development and commercialization of such Allogeneic CTL Products as is required to reasonably inform Institute for the purposes of such discussions.

8. BOOKS AND RECORDS

8.1 **Accounting**. Licensee shall calculate all amounts, and perform other accounting procedures required, under this Agreement and applicable to it in accordance with GAAP. Licensee shall keep, and shall require each Sublicensee to keep, accurate books and records showing all Licensed Products manufactured, used, and/or Sold under the terms of this Agreement. Books and records must be preserved for at least five (5) years from the date of the Earned Royalty payment to which they pertain. Upon reasonable notice, key personnel, books and records will be made reasonably available and will be open to examination by representatives or agents of Institute during regular office hours to determine their accuracy and assess Licensee's and, if applicable, each Sublicensee's, compliance with the terms of this Agreement, provided that Licensee and any Sublicensees shall not have any obligation to provide access more than once in any given twelve (12) month period.

8.2 **Audits**. In addition to the right of Institute to examine the books and records and interview key personnel as provided in Section 8.1 above, Institute, at its own cost, through an independent auditor reasonably acceptable to Licensee and, if applicable, a Sublicensee (and who has executed an appropriate confidentiality agreement reasonably acceptable to Licensee and, if applicable, a Sublicensee that requires the auditor to keep any information learned by it confidential except as needed to report its audit conclusions to Institute), may inspect and audit the relevant records of Licensee or a Sublicensee pertaining to the calculation of any Milestones and Earned Royalties due to Institute under this Agreement. Licensee and, if applicable, a Sublicensee shall provide such auditors with access to the records during reasonable business hours. Such access need not be given to any such set of records more often than once each year or more than five (5) years after the date of any report to be audited. Institute shall provide Licensee with written notice of its election to inspect and audit the records related to the Earned Royalty due hereunder not less than thirty (30) days prior to the proposed date of review of Licensee's and, if applicable,

a Sublicensee's records by Institute's auditors. Should the auditor find any underpayment of Milestones or Earned Royalties by Licensee, Licensee shall (a) promptly pay Institute the amount of such underpayment; (b) shall reimburse Institute for the cost of the audit, if such underpayment equals or exceeds the [***]; and (c) provide such auditors with an audit right exercisable within six (6) months after Institute receives the audit report. If the auditor finds overpayment by Licensee, then Licensee shall have the right to deduct the overpayment from any future royalties due to Institute by Licensee or, if no such future royalties are payable, then Institute shall refund the overpayment to Licensee within [***] days after Institute receives the audit report. Licensee may designate competitively sensitive information which such auditor may see and review but which it may not disclose to Institute; provided, however, that such designation shall not restrict the auditor's investigation or conclusions.

9. TERM; TERMINATION

9.1 **Term**. Unless otherwise terminated by operation of law, Section 9.2, or by acts of the parties in accordance with the terms of this Agreement, this Agreement will remain in effect from the Original Effective Date until the expiration of all payment obligations hereunder (the "**Term**").

9.2 **Bankruptcy**. This Agreement will automatically terminate without the obligation to provide sixty (60) days' notice as set forth in Section 9.3 or 9.4 upon the filing of a petition for relief under the United States Bankruptcy Code by or against the Licensee as a debtor or alleged debtor.

9.3 **Termination for Material Breach**. If a Party fails to perform or violates any material term of this Agreement, then the other Party may give written notice of breach to the breaching Party. If the breaching Party fails to repair the default within ninety (90) days after the date of receipt of such notice of breach, the other Party may terminate this Agreement by delivering a second written notice. If such second notice is sent to the breaching Party, this Agreement will automatically terminate on the date that such notice is received by the breaching Party.

9.4 **Termination for Convenience**. The Licensee has the right at any time to terminate this Agreement at will by providing written notice of termination to Institute, and paying to Institute a break fee equal to fifty percent (50%) of the amount of the next Milestone Payment that would be payable to Institute in respect of Licensee's then most advanced Licensed Product. Termination of this Agreement will be effective sixty (60) days from the date such termination notice is received by Institute. Institute does not have any right to terminate this Agreement for convenience.

9.5 **Termination if Patent Rights Challenged**. Institute has the right to terminate this Agreement by providing written notice of termination to Licensee, if Licensee or any of its Affiliates commence, pursue, encourage or support any administrative, judicial or other similar proceeding to challenge the validity, enforceability or scope of any rights under any Patent Rights, including without limitation by (a) filing a declaratory judgment action in which any such Patent Rights are alleged to be invalid or unenforceable; (b) citing prior art pursuant to 35 U.S.C. §301, filing a request for re-examination of any of such Patent Rights pursuant to 35 U.S.C. §302 and/or §311, or provoking or becoming a party to an interference with an application for any such Patent Rights pursuant to 35 U.S.C. §135; or (c) filing or commencing any re-examination, opposition, cancellation, nullity or similar proceedings against any such Patent Rights in any country.

9.6 **Effects of Termination or Expiration**. The termination or expiration of this Agreement will not relieve the Licensee of its obligation to pay any fees, royalties or other payments owed to Institute at the effective date of such termination or expiration and will not impair any accrued right of Institute, including the right to receive Earned Royalties in accordance with Article 4. Additionally:

(a) Upon expiration (but not termination) of this Agreement, the licenses granted to Licensee under Section 2.1 (with respect to Licensed Products that are [***], solely to the extent that the [***] has been exercised prior to expiration) shall continue on a perpetual, irrevocable, exclusive, fully paid-up, royalty-free basis.

(b) Upon termination (but not expiration) of this Agreement, all rights and licenses granted to Licensee in Article 2 shall terminate, subject to Section 9.7, all rights of Licensee under the Patent Rights and Know-How Rights shall revert to Institute, and Licensee and its Affiliates shall cease all use of the Patent Rights and the Know-How Rights. Following the effective date of such termination, all Licensed Products that are EBV-Specific CTL Products or New CTL Products or Program [***], as applicable, shall thereafter be deemed "**Reversion Products**" and shall be subject to Section 9.7. Notwithstanding the foregoing, in the event of a material breach by Institute of this Agreement permitting Licensee to terminate this Agreement pursuant to Section 9.3, as finally determined pursuant to a resolution in accordance with Article 20 or mutually agreed by the Parties (including by way of settlement), Licensee may, at its sole discretion and in lieu of such termination, elect to keep this Agreement in place and continue the development and commercialization of Licensed Products hereunder. If Licensee decides to keep this Agreement in place in lieu of termination, all payments, including all Milestone Payments and Earned Royalties, that would be due to Institute thereafter under the terms of this Agreement shall be [***] for the remainder of the Term.

(c) Upon termination (but not expiration) of this Agreement, all regulatory filings (including all INDs and BLAs) and Regulatory Approvals and all other documents necessary to further develop and commercialize the Reversion Products, as they exist as of the date of such termination, (and all of Licensee's right, title and Institute therein and thereto) shall be assigned to Institute, and Licensee shall provide to Institute one (1) copy of the foregoing documents and filings that relate to Reversion Products, subject to Institute's reimbursement of Licensee's actual costs incurred in transferring such items to Institute, and preparing such items in connection with such transfer. For clarity, Institute shall have the right to use the foregoing material information, materials and data developed by Licensee solely in connection with Institute's (or its Affiliates or licensees') development, manufacture and commercialization of Reversion Products.

(d) Upon termination (but not expiration) of this Agreement, in the event that Licensee has inventory of any Licensed Product included in the Reversion Products prior to the effective date of termination, Licensee shall have [***] after the effective date of termination during which to dispose of such inventory (subject to the payment to Institute of any royalties due hereunder thereon) (the "**Inventory Disposal Period**").

(e) Upon termination (but not expiration) of this Agreement, Licensee shall provide to Institute the tangible embodiments of all know-how, data and information Controlled by Licensee and its Affiliates in existence as of the effective date of such termination to the extent necessary for the development and commercialization of the Reversion Products as such Reversion Products exist as of the effective date of such termination, subject, to Institute's reimbursement of Licensee's actual out of pocket and internal direct costs and expense incurred in transferring such items, and preparing and making such items in connection with such transfer. Licensee shall grant, and hereby grants to Institute, subject to Institute's payment obligations under Section 9.7, and reimbursement of Licensee's costs of transferring such materials, a perpetual, worldwide, transferable, sublicensable right and license under such know-how, data and information solely for (i) researching, developing, using, importing, selling and offering for sale Reversion Products in the Territory, which license shall be exclusive for purposes of this subpart (i), and (ii) making and having made Reversion Products anywhere in the Territory for use, importation, sale and offer for sale in the Territory, which license shall be non-exclusive for purposes of this subpart (ii).

(f) Upon termination (but not expiration) of this Agreement, subject to Section 9.7, Licensee shall grant and hereby grants to Institute an exclusive, royalty-bearing (as set forth in Section 9.7), non-transferable license, with the right to grant sublicenses, under any patents or patent applications Controlled by Licensee or Affiliates as of the effective date of termination [***] and that are [***].

(g) Upon termination (but not expiration) of this Agreement, Licensee shall provide to Institute all data generated during the term of this Agreement pursuant to this Agreement and the Research Agreement [***] Reversion Products and [***], subject to Institute's [***].

(h) Neither Party shall be relieved of any obligation that accrued prior to the effective date of expiration or a termination.

(i) Any costs and expenses incurred by Licensee in connection with the assignments and transfers made by Licensee under this Section 9.6 shall be borne by Institute.

(j) Nothing in this Section 9.6 shall be deemed to limit any remedy to which either Party may be entitled by applicable Law.

(k) The Parties agree that CMV-Specific CTL Products, [***] and CMV [***] shall not be considered Reversion Products under the Agreement and accordingly clause (b) through (g) (inclusive) of this Section 9.6 and Section 9.7 shall not be applicable thereto.

9.7 **Reversion of Rights**. If Institute obtains rights in any Reversion Product pursuant to this Article 9, Institute will have the rights under such Reversion Product set forth in Section 9.6, provided that if Institute elects to grant a license or sublicense to any Third Party under patent rights or know-how Controlled by Licensee and relating to such Reversion Products (the "**Reversion Product IP**") to develop and commercialize any such Reversion Product, then on a

Reversion Product-by-Reversion Product basis, Institute shall pay to Licensee a specified percentage of all consideration of any type received from each such Third Party licensee or sublicensee paid for the grant of such license or sublicense, or sales of products that are claimed or covered by such Reversion Product IP, as set forth in the table below, with the applicable percentage being based on (a) [***], and (b) [***].

[***] Effective Date of Termination	Royalty Percentage [***]	Royalty Percentage [***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]

9.8 **Surviving Provisions**. Any termination or expiration of this Agreement will not affect the rights and obligations set forth in the following Articles and Sections: Articles 1, 10, 12, 16, 17, 19, 20, 22 and 23, and Sections 2.6, 3.4, 4.12 and 4.13 (to the extent applicable to payments accruing during the Term), 5.6 (to the extent applicable to Licensed Products that become Reversion Products pursuant to Section 5.6), 8.1, 8.2, 9.6, 9.7, 9.8, 9.9 (following expiration, but not termination), 11.2(b) (with respect to the last sentence thereof, solely with respect to the manufacture, use, offer to sell, sale, importation or other disposition of the applicable Licensed Products prior to the expiration or termination of this Agreement), 11.3, 13.1, 13.3, 15.1, 15.2 and 15.3.

9.9 **Section 365(n) of the Bankruptcy Code**. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property" as defined under Section 101(35A) of the U.S. Bankruptcy Code to the extent permitted thereunder. The Parties shall retain and may fully exercise all of their respective rights and elections under the U.S. Bankruptcy Code. Upon the bankruptcy of any Party, the non-bankrupt Party shall further be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property, and such, if not already in its possession, shall be promptly delivered to the non-bankrupt Party, unless the bankrupt Party elects to continue, and continues, to perform all of its obligations under this Agreement.

10. USE OF NAMES AND TRADEMARKS

10.1 Nothing contained in this Agreement will be construed as conferring any right to either Party to use in advertising, publicity or other promotional activities any name, trade name, trademark or other designation of the other Party (including a contraction, abbreviation or simulation of any of the foregoing), except if such use if required by applicable law, rule or regulation (including the regulations of any securities exchange upon which Licensee's shares are listed).

11. REPRESENTATIONS AND WARRANTIES

11.1 **Mutual Representations and Warranties**. Each Party represents and warrants to the other Party that, as of the Execution Date:

(a) such Party is duly organized and validly existing under the Laws of the jurisdiction of its incorporation or organization;

(b) such Party has taken all action necessary to authorize the execution and delivery of this Agreement and the performance of its obligations under this Agreement;

(c) this Agreement is a legal and valid obligation of such Party, binding upon such Party and enforceable against such Party in accordance with the terms of this Agreement, except as enforcement may be limited by applicable bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles; and

(d) such Party has all right, power and authority to enter into this Agreement, to perform its obligations under this Agreement.

11.2 **Certain Institute Representations and Covenants**.

(a) Institute is the sole owner of the Patent Rights licensed to Licensee hereunder with the right to grant Licensee the licenses described in Sections 2.1 and 2.2. As of the Execution Date, Institute has not assigned, transferred, conveyed, granted any license or other rights, or otherwise encumbered its right, title and interest in the Patent Rights or the Know-How, or other patents, patent applications or know-how specific to CTL Products, in any way that would conflict with or limit the scope of any of the rights or licenses granted to Licensee hereunder.

(b) The Institute hereby represents and warrants to Licensee that as of the Execution Date, to the best of its knowledge there are no patents or patent applications that if issued as patents, in either case, Controlled by Institute that are necessary for the development and commercialization of CTL Products, HPV-Specific CTL Products, BKV/JCV-Specific CTL Products or the [***] as currently conducted by Institute, or as contemplated to be conducted by the Parties pursuant to this Agreement (if the [***] was exercised by Licensee) and/or the Research Agreement. Institute hereby irrevocably covenants, on behalf of itself and its Affiliates that it will not, directly or indirectly, alone or by, with or through others, cause, induce or authorize, or voluntarily assist, participate or cooperate in, the commencement, maintenance or prosecution of any action or proceeding of any kind or nature whatsoever, including, but not limited to, any suit, complaint, grievance, demand, claim, cause of action in, of or before any Governmental Authority against Licensee, or any Affiliate or sublicensee of Licensee, arising from, or in connection with any alleged infringement of any issued patents in any country Controlled by Institute in connection with the manufacture, use, offer to sell, sale, importation or other disposition of any Licensed Product that is a CTL Product, a New CTL Product or a Program [***] in accordance with and subject to all terms and conditions applicable to a license granted under this Agreement, by Licensee, or any Affiliate or sublicensee of Licensee occurring after the First Restatement Date .

11.3 **Disclaimer of Representations and Warranties**. Other than the representations and warranties provided in Sections 11.1 and 11.2 above, NEITHER PARTY MAKES ANY REPRESENTATIONS AND WARRANTIES, WHETHER EXPRESS OR IMPLIED, AND EXPLICITLY DISCLAIMS ANY REPRESENTATION AND WARRANTY, INCLUDING WITH RESPECT TO ANY ACCURACY, COMPLETENESS, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COMMERCIAL UTILITY, NON-INFRINGEMENT OR TITLE FOR THE INTELLECTUAL PROPERTY, PATENT RIGHTS, LICENSE AND ANY PRODUCT.

12. LIMITATION OF LIABILITY

12.1 NEITHER PARTY WILL BE LIABLE FOR ANY LOST PROFITS, COSTS OF PROCURING SUBSTITUTE GOODS OR SERVICES, LOST BUSINESS, ENHANCED DAMAGES FOR INTELLECTUAL PROPERTY INFRINGEMENT OR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR OTHER SPECIAL DAMAGES SUFFERED BY THE OTHER PARTY OR ITS SUBLICENSEES OR AFFILIATES ARISING OUT OF OR RELATED TO THIS AGREEMENT FOR ALL CAUSES OF ACTION OF ANY KIND (INCLUDING TORT, CONTRACT, NEGLIGENCE, STRICT LIABILITY AND BREACH OF WARRANTY) EVEN IF THE OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

13. INTELLECTUAL PROPERTY; PATENT PROSECUTION AND MAINTENANCE

13.1 **Intellectual Property Ownership**. With the exception of the rights granted to Licensee pursuant to this Agreement, each Party shall retain all right, title and interest in and to its Background IP. Ownership of intellectual property and inventions arising as a result of the Parties' activities under the Research Agreement are set forth in Article 9 of the Research Agreement. Except as set forth in the Research Agreement, ownership of intellectual property rights arising out of this Agreement or the Research Agreement shall follow inventorship. Inventorship shall be determined in accordance with United States Patent Law (without regard to any conflict of law principles).

13.2 **Patent Prosecution**.

(a) Institute shall have the first right, and shall use Commercially Reasonable Efforts to diligently prosecute and maintain the Patent Rights existing as of the Original Effective Date and licensed to Licensee hereunder (the "**Base Patent Rights**") at Licensee's expense, using United States based patent counsel of its choice reasonably acceptable to Licensee. Institute will provide Licensee promptly with copies of all relevant documentation so that Licensee will be informed of the continuing prosecution and may comment upon such documentation sufficiently in advance of any initial deadline for filing a response. Institute agrees that it will incorporate any reasonable comments by Licensee in relation to such prosecution activities, provided that with respect to any claims of the Base Patent Rights that relate directly to Licensed Products or the manufacture or use thereof, Licensee shall have the right to make the

final decision regarding prosecution of such claims, including the filing of any new claims relating to Licensed Products or the manufacture or use thereof. Licensee agrees that all documentation relating to the prosecution and maintenance of the Patent Rights shall be the Confidential Information of both Parties. Without limiting the foregoing, Institute shall use all reasonable efforts to amend any patent application to include claims reasonably requested by Licensee to protect the products contemplated to be sold under this Agreement and the activities being conducted under the Research Agreement.

(b) Licensee shall have the first right, and shall use Commercially Reasonable Efforts to diligently prosecute and maintain any patents and patent applications arising from activities conducted under the Research Agreement that relate to (i) Allogeneic CTLs or Allogeneic CTL Products, and (ii) Autologous CTL Products that are EBV-Specific CTL Products, and (iii) New CTL Products and Program [***], in each case of (i), (ii) and (iii), provided that such patents and patent applications do not claim priority to any patent or patent application included in the Base Patent Rights (in which case Section 13.2(a) shall apply) (the "**Research Agreement Patent Rights** "), at Licensee's expense, using United States based patent counsel of its choice reasonably acceptable to Institute; provided, however, that Institute shall reimburse Licensee for fifty percent (50%) of all prosecution and maintenance costs (including attorney's fees) incurred by Licensee for the filing, prosecution and maintenance of any patents and patent applications claiming priority to, or having common priority with, PCT Application Number PCT/AU2013/001216 ("Improved Human Herpesvirus Immunotherapy") (including such patent application itself). For clarity, any Patent Rights Controlled by Institute as of the date upon which the Parties mutually agree in writing to include a New Research Program within the Research Agreement, and New CTL Products arising from such New Research Program within the scope of this Agreement (each, a "**New Research Program Inclusion Date**") that relate specifically to such New Research Program (including the Target thereof) or such New CTL Products (the "**New Research Patent Rights**") shall be considered Research Agreement Patent Rights as of the New Research Program Inclusion Date, and shall be subject to this Section 13.2. Promptly following any New Research Program Inclusion Date, unless the Parties otherwise agree in writing, Institute will transfer to Licensee, or to counsel of Licensee's choice reasonably acceptable to Institute, all relevant documentation required for Licensee to assume responsibility for prosecution and maintenance of such New Research Patent Rights. Following the New Research Program Inclusion Date, Licensee will provide Institute promptly with copies of all relevant documentation so that Institute will be informed of the continuing prosecution and may comment upon such documentation sufficiently in advance of any initial deadline for filing a response. Licensee agrees that it will incorporate any reasonable comments by Institute in relation to such prosecution activities, provided that with respect to any claims of the Research Agreement Patent Rights that relate directly to Autologous CTLs or Autologous CTL Products, or the manufacture or use thereof, Institute shall have the right to make the final decision regarding prosecution of such claims, including the filing of any new claims relating to Autologous CTLs or Autologous CTL Products, or the manufacture or use thereof.

(c) Each Party agrees that all documentation relating to the prosecution and maintenance of the Patent Rights shall be the Confidential Information of both Parties. Without limiting the foregoing, Institute shall use all reasonable efforts to amend any patent application to include claims reasonably requested by Licensee to protect the products contemplated to be sold under this Agreement and the activities being conducted under the Research Agreement.

(d) The Parties agree that as of the Execution Date, Institute shall have the sole right to prosecute and maintain, and Licensee shall have no obligation to pay any costs or expenses incurred after the Execution Date in relation to the prosecuting and maintaining of, the patent applications listed in Schedule 13.2 or any patent or patent application claiming priority thereto, or having common priority therewith.

13.3 **Effects of Termination**. The Licensee will be obligated to pay costs incurred in relation to prosecuting and maintaining the Patent Rights in accordance with Section 13.2, even if the invoices for such costs are received by the Licensee after the delivery or receipt of a notice of termination. The Licensee may terminate its obligation to pay the cost of any given patent application or patent under the Patent Rights in any or all designated countries upon three (3)-months' written notice to Institute. Institute may continue prosecution and/or maintenance of such application(s) or patent(s), and applications in foreign countries where Licensee has elected not to pay costs, at its sole discretion and expense, in which case the Licensee will have no further right or licenses thereunder.

14. PATENT INFRINGEMENT

14.1 **Infringement Notice**. If Institute or the Licensee learns of infringement of potential commercial significance of any Patent Rights licensed under this Agreement, the knowledgeable Party will provide the other Party with: (a) written notice of such infringement; and (b) any evidence of such infringement available to it (the "**Infringement Notice**"). During the period in which, and in the jurisdiction where, Licensee has exclusive rights under this Agreement, neither Institute nor the Licensee will notify a possible infringer of infringement or put such infringer on notice of the existence of any Patent Rights without first obtaining consent of the other, which consent will not be unreasonably withheld, delayed or conditioned; provided, however, that Licensee may notify any then-existing Sublicensees under the relevant Patent Rights of such infringement without Institute's prior consent if such Sublicensee is bound by obligations of confidentiality with respect to such information. Both Institute and the Licensee will use their diligent efforts to cooperate with each other to terminate such infringement (with or without litigation).

14.2 **Enforcement**. If infringing activity of potential commercial significance has not been abated within [***] following the date the Infringement Notice for such activity was provided, then during the period in which, and in the jurisdiction where, Licensee has exclusive rights under this Agreement, Licensee shall have the first right, but not the obligation, to Institute suit for patent infringement against the infringer after providing Institute (a) [***], including an [***] and (b) [***]. Institute may voluntarily join such suit at Licensee's reasonable expense, but

may not thereafter commence suit against the infringer for the acts of infringement that are the subject of Licensee's suit or any judgment rendered in such suit. Licensee may not join Institute in a suit initiated by Licensee without Institute's prior written consent, such consent not to be unreasonably withheld, delayed or conditioned. If in a suit initiated by Licensee, Institute is involuntarily joined other than by Licensee, then Licensee will pay any documented costs incurred by Institute arising out of such suit, including any documented legal fees of counsel that Institute selects and retains to represent it in the suit. Licensee shall be free to enter into a settlement, consent judgment or other voluntary disposition, provided that any settlement, consent judgment or other voluntary disposition that (i) limits the scope, validity or enforcement of the Patent Rights or (ii) admits fault or wrongdoing on the part of Licensee or Institute must be approved in advance by Institute in writing, such approval not to be unreasonably withheld, delayed or conditioned. Licensee's request for such approval shall include complete copies of final settlement documents, a detailed summary of such settlement, and any other information material to such settlement. Institute shall provide Licensee notice of its approval or denial within [***] of any request for such approval by Licensee, provided that (A) in the event Institute wishes to deny such approval, such notice shall include a detailed written description of Institute's reasonable objections to the proposed settlement, consent judgment, or other voluntary disposition and (B) Institute shall be deemed to have approved of such proposed settlement, consent judgment, or other voluntary disposition in the event it fails to provide such notice within such [***] period in accordance herewith.

14.3 **Step-In Right**. If, within [***] following the date the Infringement Notice was provided, infringing activity of potential commercial significance has not been abated and if Licensee has not brought suit against the infringer, then Institute may Institute suit for patent infringement against the infringer. If Institute institutes such suit, then Licensee may not join such suit without the prior written consent of Institute and may not thereafter commence suit against the infringer for the acts of infringement that are the subject of Institute's suit or any judgment rendered in such suit.

14.4 **Recoveries**. Any recovery or settlement received in connection with any suit will first be shared by Institute and Licensee to cover any litigation costs each incurred and next shall be paid to Institute or Licensee to cover any litigation costs it incurred in excess of the litigation costs of the other. Any remaining recoveries shall be allocated as follows:

(a) For any portion of the recovery or settlement related to the infringement of the Patent Rights, other than for amounts attributable and paid as enhanced damages for willful infringement: for any suit that is initiated by Licensee and in which Institute was not a party in the litigation, Institute shall receive [***] of the recovery, and the Licensee shall receive the remainder; and

(b) for any suit that is initiated by the Licensee or Institute and that the other Party voluntarily joined (but only to the extent such voluntary joining is allowed under this Agreement or expressly by the other Party in a separate agreement) or involuntarily joined, the non-initiating Party's percentage of such recovery shall be [***].

For any portion of the recovery or settlement related to the infringement of Patent Rights paid as enhanced damages for willful infringement:

(c) for any suit that is initiated by Licensee or Institute and the other Party voluntarily joined but only to the extent such voluntary joining is allowed under this Agreement or expressly by the other Party in a separate agreement) or involuntarily joined, the non-initiating Party's percentage of such recovery shall be [***] and the initiating Party shall receive the remainder; and

(d) for any suit that is initiated by Licensee and in which Institute was not a party in the litigation, Institute shall receive [***] and the Licensee shall receive the remainder.

For any portion of the recovery or settlement received in connection with any suit that is initiated by Institute and in which Licensee was not a party in the litigation, any recovery [***].

14.5 **Cooperation**. Each Party will reasonably cooperate and assist with the other in litigation proceedings Instituted hereunder but at the expense of the Party who initiated the suit (unless such suit is being jointly prosecuted by the Parties). For clarity, such requirement does not require a Party to join a suit unless otherwise specifically required under this Agreement. If Institute is subjected to Third Party discovery related to the Patent Rights licensed to Licensee hereunder, or to Licensed Products, Licensee will pay Institute's documented out of pocket expenses with respect to same.

15. INDEMNIFICATION

15.1 **Indemnification by Licensee**. Licensee shall defend, indemnify and hold Institute and its respective trustees, officers, faculty, students, employees, contractors and agents (the "**Institute Indemnitees**") harmless from and against any and all liability, damage, loss, cost or expense (including reasonable attorneys' fees), including, without limitation, bodily injury, risk of bodily injury, death and property damage to the extent arising out of Third Party claims and suits related to (a) this Agreement or any Sublicense, including (i) the development, testing, use, manufacture, promotion, sale or other disposition of any Licensed Product (including any product liability claim), excluding any activities relating to Autologous CTL Products prior to the exercise of the Option, or following reversion to Institute pursuant to Section 7.3 and/or Section 9.6, (ii) any enforcement action or suit brought by Licensee against a Third Party for infringement of the Patent Rights, (iii) any claim by a Third Party that the practice of the Patent Rights or the design, composition, manufacture, use, sale or other disposition of any Licensed Product infringes or violates any patent, copyright, trade secret, trademark or other intellectual property right of such Third Party, (iv) any breach of this Agreement or Laws by Licensee, its Affiliates or Sublicensees and (b) Licensee's negligence, omissions or willful misconduct, provided that Licensee's obligations pursuant to this Section 15.1 shall not apply to the extent such claims or suits result from the negligence, gross negligence or willful misconduct of any Institute Indemnitees as determined by a court of law.

15.2 **Indemnification by Institute**. Institute shall, to the extent permitted by law, defend, indemnify and hold Licensee and its respective stockholders, officers, representatives, employees, contractors and agents ("**Licensee Indemnitees**") harmless (or shall cause each [***] to defend, indemnify and hold Licensee Indemnitees harmless) from and against any and all liability, damage, loss, cost or expense (including reasonable attorneys' fees), including, without limitation, bodily injury, risk of bodily injury, death and property damage to the extent arising out of Third Party claims and suits related to any grant of rights to any Third Party ("[***]") to develop or commercialize any product directed to one or more [***] associated with [***] after the Execution Date, provided that Institute's obligations pursuant to this Section 15.2 shall not apply to the extent such claims or suits result from the negligence, gross negligence or willful misconduct of any Licensee Indemnitees as determined by a court of law.

15.3 **Process** . As a condition to an Institute Indemnitee's or Licensee Indemnitee's (each, an "**Indemnitee**") right to receive indemnification under Section 15.1 or Section 15.2, as applicable, an Indemnitee shall: (a) promptly notify (not to exceed thirty (30) days) the indemnifying Party as soon as it becomes aware of a claim or suit for which indemnification may be sought pursuant hereto; (b) reasonably cooperate, and cause the individual Indemnitees claiming indemnification under this Article 15 to reasonably cooperate, with the indemnifying Party in the defense, settlement or compromise of such claim or suit; and (c) permit the indemnifying Party to control the defense, settlement or compromise of such claim or suit, including the right to select defense counsel. In no event, however, may the indemnifying Party compromise or settle any claim or suit in a manner which (i) admits fault or negligence on the part of any Indemnitee; (ii) commits any Indemnitee to take, or forbear to take, any action, without the prior written consent of the other Party (which consent in the case of either (i) or (ii) shall not be unreasonably withheld, delayed or conditioned), or (iii) where the indemnifying Party is Licensee, grant any rights under the Patent Rights except for Sublicenses permitted under Article 2 . The Indemnitees shall reasonably cooperate with the indemnifying Party and its counsel in the course of the investigation of, preparation for and defense of any such suit, claim or demand, such cooperation to include without limitation using reasonable efforts to provide or make available documents, information and witnesses, and provided further that no Indemnitee may compromise or settle any such Third Party claim without the indemnifying Party's written consent.

15.4 **Insurance**. The Licensee, at its reasonable cost and expense, will insure its activities in connection with any work performed hereunder and will obtain, keep in force, and maintain Commercial Form General Liability Insurance (contractual liability included) with limits as follows:

Each Occurrence	[***]
Products/Completed Operations Aggregate	[***]
Personal Injury	[***]
General Aggregate (commercial form only)	[***]

15.5 **Certificates**. After receipt of Institute's written request, the Licensee will furnish Institute with certificates of insurance evidencing compliance with all requirements. Such certificates will: indicate Institute as an additional insured(s) under the coverage described above in Section 15.4.

16. **NOTICES**

Any notice or payment hereunder shall be deemed to have been properly given when sent in writing in English to the respective address below and shall be deemed effective:

(a) on the date of delivery if delivered in person;

(b) on the date of mailing if mailed by first-class certified mail, postage paid;

(c) on the date of mailing if mailed by any global express carrier service that requires the recipient to sign the documents demonstrating the delivery of such notice or payment; or

(d) in the case of notices, if sent by email, on the date the recipient acknowledges having received that email by either an email sent to the sender or by a notice delivered by another method in accordance with this Section 16.1, except that, automated replies and "read receipts" shall not be considered acknowledgement of receipt.

In the case of Licensee:

For notices:

Atara Biotherapeutics, Inc.
611 Gateway Blvd #900
South San Francisco, CA 94080
U.S.A.
Attention: General Counsel

With a Copy to:

Atara Biotherapeutics, Inc.
2430 Conejo Spectrum St.
Thousand Oaks, CA 91320
U.S.A.
Attention: Global Head of Research & Development

In the case of Institute:

For notices:

QIMR Berghofer Medical Research Institute
300 Herston Road,
Herston, Queensland, 4006
AUSTRALIA
Attention: Chief Operating Officer

For remittance of payments:

QIMR Berghofer Medical Research Institute
300 Herston Road,
Herston, Queensland, 4006
AUSTRALIA
Attention: Chief Financial Officer

17. **ASSIGNABILITY**

17.1 The Licensee may assign or transfer this Agreement, and the rights granted to Licensee under the terms of this Agreement, without Institute's prior written consent, only to an Affiliate of Licensee or in the case of assignment or transfer to a party that succeeds to all or substantially all of Licensee's business or assets relating to this Agreement, whether by stock sale, merger, operation of law or otherwise, provided that Licensee gives Institute written notice within [***] after the effective date of such assignment. This Agreement is binding upon and will inure to the benefit of a Party, its successors and assigns. Any assignment not in accordance with this Section 17.1 shall be null and void in its entirety.

18. **FORCE MAJEURE**

18.1 The Parties shall not be responsible for failure to perform due to the occurrence of any events beyond their reasonable control which render their performance impossible, including, but not limited to: accidents (environmental, toxic spill, etc.); acts of God; biological or nuclear incidents; casualties; earthquakes; fires; floods; governmental acts; orders or restrictions; inability to obtain suitable and sufficient labor, transportation, fuel and materials; local, national or state emergency; power failure and power outages; acts of terrorism; strike; and war.

19. **GOVERNING LAWS**

19.1 This Agreement will be interpreted and construed in accordance with the laws of the State of New York, United States of America, excluding any choice of law rules that would direct the application of the laws of another jurisdiction, but the scope and validity of any patent or patent application will be governed by the applicable laws of the country of such patent or patent application.

20. **DISPUTE RESOLUTION**

20.1 **Executive Resolution**. The parties shall initially seek amicably to settle all disputes (each, a "**Dispute**") arising out of or in connection with this Agreement by negotiation, which may include discussion at the JSC, subject to the Parties' respective final decision making authority as set forth in Section 3.3(f) of the Research Agreement. If, within [***] after written notice by either Party of the existence of a Dispute, the Parties do not resolve such Dispute, then the Dispute shall be referred to the Designated Executive Officers from each Party for further negotiation. If the Designated Executive Officers of each Party cannot resolve such Dispute, then subject to Section 3.3(f) of the Research Agreement and Section 20.7 of this Agreement, such Dispute will be referred to final binding arbitration in accordance with Sections 20.2 through 20.6.

20.2 **Arbitration**. Any Dispute referred for arbitration shall be finally settled under the Rules of the International Centre for Dispute Resolution (the "**Rules of Arbitration**") then in force, by one arbitrator appointed in accordance with such Rules of Arbitration. The Arbitral Tribunal shall be guided by the IBA Rules on the Taking of Evidence in International Arbitration, and there shall be no depositions. The place of the arbitration shall be New York, New York, United States of America. The language of the arbitration shall be English.

20.3 **Selection of the Arbitrator**. Each arbitrator shall have a [***] of experience in arbitrating disputes in the pharmaceutical industry, or of pharmaceutical licensing disputes and be admitted to practice law in the United States of America. The arbitrator conducting the arbitration must and shall agree to render an award within [***] after the final hearing. The arbitrator [***]. Without limiting any other remedies that may be available under Applicable Laws, the arbitrator shall have [***].

20.4 **Conduct of the Arbitration**. The Parties undertake to keep confidential all awards in their arbitration, together with all materials in the proceedings created for the purpose of the arbitration and all other documents produced by another Party in the proceedings not otherwise in the public domain, save and to the extent that disclosure may be required of a Party by legal duty or under Applicable Law, the rules and regulations of any stock exchange or quotation services on which such Party's stock is traded or quoted, to protect or pursue a legal right or to enforce or challenge an award in legal proceedings before a court or other judicial authority.

20.5 **Continued Performance**. Unless otherwise agreed in writing, the Parties will continue to perform their respective obligations under this Agreement during any arbitration or court proceeding seeking enforcement of an arbitral decision or award, and, unless this Agreement is in its entirety deemed null and void or is otherwise revoked or rescinded in its entirely, the Parties shall continue to perform their respective remaining obligations under this Agreement, and may continue to exercise their respective remaining rights and remedies thereunder, following any arbitration.

20.6 **Preliminary Injunctions**. Notwithstanding anything in this Agreement to the contrary, a Party may seek a temporary restraining order or a preliminary injunction from any court of competent jurisdiction in order to prevent immediate and irreparable injury, loss, or damage on a provisional basis, pending the decision of the arbitrator(s) on the ultimate merits of any Dispute.

20.7 **Patent Disputes**. Notwithstanding anything in this Agreement to the contrary, any dispute concerning inventorship that is not resolved within [***] following notice by one Party to the other Party of the creation or reduction to practice of any Invention, and any dispute regarding any and all issues regarding the scope, construction, validity, and enforceability of any patent or patent application (including whether or not such patent or patent appli cation should be included in the Patent Rights under the License Agreement) in a country within the Territory shall be determined in a court or other governmental authority of competent jurisdiction under the applicable patent laws of such country.

21. COMPLIANCE WITH LAWS

21.1 The Licensee shall comply with all applicable international, national, state, regional and local laws and regulations in performing its obligations hereunder and in its use, manufacture, Sale or import of the Licensed Products. The Licensee will observe all applicable United States and foreign laws with respect to the transfer of Licensed Products and related technical data to foreign countries, including, without limitation, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations.

22. **CONFIDENTIALITY**

22.1 **Confidential Information**. The Licensee and Institute will treat and maintain the other Party's Confidential Information in confidence using at least the same degree of care as the receiving Party uses to protect its own proprietary and confidential information of a like nature from the date of disclosure until seven (7) years after the termination or expiration of this Agreement, provided that a Party may designate one or more specific, defined items of Confidential Information as 'Trade Secret', by giving written notice to the other Party briefly outlining its reasons why longer protection is warranted, and in such case the other Party shall protect such information indefinitely unless and until Section 22.4 applies. Confidential Information can be written, oral, or both.

22.2 **Relationship to Existing Confidentiality Agreement**. This Agreement supersedes that certain Confidential Disclosure Agreement entered into between Licensee and Institute, dated May 28, 2015 (the "**Existing Confidentiality Agreement**"); provided that all "Confidential Information" disclosed by the disclosing Party thereunder shall be deemed Confidential Information of the disclosing Party hereunder and shall be subject to the terms and conditions of this Agreement and the receiving Party thereunder shall be bound by and obligated to comply with such terms and conditions as if they were the receiving Party hereunder. The foregoing shall not be interpreted as a waiver of any remedies available to the disclosing Party as a result of any breach, prior to the Original Effective Date, by the receiving Party, respectively, of its obligations pursuant to the Existing Confidentiality Agreement.

22.3 **Permitted Disclosure**. The Licensee and Institute may use and disclose the other Party's Confidential Information to their Affiliates, employees, agents, consultants, contractors, and, in the case of the Licensee, its Sublicensees, in each case on a need to know basis for the purposes of such Affiliates, Sublicensees and Third Parties performing activities under this Agreement or the Research Agreement, provided that such parties are bound by a like duty of confidentiality as that found in this Article 22 (Confidentiality). Furthermore, Licensee may disclose Institute's Confidential Information to: (a) Licensee's potential or actual collaborators, partners, licensees and sublicensees, and (b) potential or actual investment bankers, acquirers, lenders or investors, and (c) advisors of Licensee or any of the foregoing in (a) and (b); each of whom, prior to disclosure, must be bound by similar obligations of confidentiality and non-use as set forth in this Article 22.

22.4 **Limitations**. Nothing contained herein will restrict or impair, in any way, the right of the Licensee or Institute to use or disclose any of the other Party's Confidential Information:

(a) that recipient can demonstrate by written records was previously known to it prior to its disclosure by the disclosing Party;

(b) that recipient can demonstrate by written records is now, or becomes in the future, public knowledge other than through acts or omissions of recipient;

(c) that recipient can demonstrate by written records was obtained lawfully and without restrictions on the recipient from sources independent of the disclosing Party; and

(d) that a Party is required to disclose pursuant to applicable law, rule or regulation.

The Licensee or Institute also may disclose Confidential Information that is required to be disclosed: (i) to a governmental entity or agency in connection with seeking any governmental or regulatory approval, governmental audit, or other governmental contractual requirement; or (ii) by law, provided that the recipient uses reasonable efforts to give the party owning the Confidential Information sufficient notice of such required disclosure to allow the party owning the Confidential Information reasonable opportunity to object to, and to take legal action to prevent, such disclosure. Notwithstanding anything to the contrary in this Agreement, Licensee may disclose Confidential Information it receives pursuant to this Agreement, to its actual or potential investors, acquirors, advisors, Sublicensees, consultants and employees who are bound by obligations of confidentiality with respect thereto.

22.5 **Return of Information**. Upon termination of this Agreement, or the request of the disclosing Party, if earlier, the Licensee and Institute will destroy or return any of the disclosing Party's Confidential Information in its possession within [***] following the termination of this Agreement and provide each other with prompt written notice that such Confidential Information has been returned or destroyed. Each Party may, however, retain one (1) copy of such Confidential Information for archival purposes in non-working files.

22.6 **Additional Confidentiality Obligations**. Upon written request of Licensee, Institute agrees to cooperate in good faith with Licensee and Memorial Sloan Kettering Cancer Center ("**MSK**") in order to enter into a mutually agreed tripartite confidentiality and non-disclosure agreement with Licensee and MSK, which agreement shall provide for the obligations of non-disclosure with respect to information shared between the Parties and MSK for the purposes of furthering the activities under this Agreement and the Research Agreement.

23. MISCELLANEOUS

23.1 **Headings**. The headings of the Sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

23.2 **Binding Agreement**. This Third Restated Agreement is not binding on the Parties until it has been signed below on behalf of each Party. It is then effective as of the Execution Date.

23.3 **Amendments**. No amendment or modification of this Agreement is valid or binding on the parties unless made in writing (identifying the provision that is amended or modified) and signed on behalf of each Party.

23.4 **Waiver**. No waiver by either Party of any breach or default of any of the agreements contained herein will be deemed a waiver as to any subsequent and/or similar breach or default. No waiver of this Agreement is valid or binding on the Parties unless made in writing (identifying the provision that is waived) and signed on behalf of each Party.

23.5 **Entire Agreement**. This Agreement and the Research Agreement embody the entire understanding of the Parties and supersedes the Original License Agreement, the First Restated Agreement, the Second Restated Agreement and all previous communications, representations or understandings, either oral or written, between the Parties relating to the subject matter hereof.

23.6 **Invalidity**. In case any of the provisions contained in this Agreement is held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions of this Agreement and this Agreement will be construed as if such invalid, illegal or unenforceable provisions had never been contained in it.

23.7 **Independent Contractors**. In performing their respective duties under this Agreement, each of the Parties will be operating as an independent contractor. Nothing contained herein will in any way constitute any association, partnership, or joint venture between the Parties hereto, or be construed to evidence the intention of the Parties to establish any such relationship. Neither Party will have the power to bind the other Party or incur obligations on the other Party's behalf without the other Party's prior written consent.

23.8 **Construction**. Except where the context otherwise requires, wherever used, the use of any gender will be applicable to all genders, and the word "or" is used in the inclusive sense. When used in this Agreement, "including" means "including without limitation". References to either Party include the successors and permitted assigns of that Party. The Recitals are incorporated by reference into this Agreement. The headings of this Agreement are for convenience of reference only and in no way define, describe, extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement. The Parties have each consulted counsel of their choice regarding this Agreement, and, accordingly, no provisions of this Agreement will be construed against either Party on the basis that the Party drafted this Agreement or any provision thereof. The official text of this Agreement, any notice given or accounts or statements required by this Agreement, and any dispute proceeding related to or arising hereunder, will be in English. If any dispute concerning the construction or meaning of this Agreement arises, then reference will be made only to this Agreement as written in English and not to any translation into any other language.

23.9 **Counterparts**. This Third Restated Agreement may be executed in one or more counterparts, each of which together shall constitute one and the same Agreement. For purposes of executing this Third Restated Agreement, a facsimile (including a PDF image delivered via email) copy of this Third Restated Agreement, including the signature pages, will be deemed an original. The Parties agree that neither Party will have any rights to challenge the use or authenticity of a counterpart of this Third Restated Agreement based solely on that its signature, or the signature of the other Party, on such counterpart is not an original signature.

- Signature Page Follows -

IN WITNESS WHEREOF, both Institute and the Licensee have executed this Third Restated Agreement by their respective and duly authorized officers on the day and year written below. The Parties acknowledge that the signature date may not be the Execution Date.

A**TARA BIOTHERAPEUTICS, INC.**	**THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH**
By: /s/ [***] (Signature)	By: /s/ [***] (Signature)
Name: [***] (Please Print)	Name: [***] (Please Print)
Title: Head of R&D	Title: Chief Operating Officer
Date: 8/31/2020	Date: 31 August 2020

Schedule 1.26

Competing Products

[***]

Schedule 1.80

Patent Rights

[***]

Schedule 2.1(a)

Assigned Patents

[***]

Schedule 2.5

Key Terms of Academic Collaboration Agreement

[***]

Schedule 4.15

1. **[***] Fees**. Institute will pay to Licensee [***] Fees are non-refundable and non-creditable.

2. **[***] Fee Payment Period.** Subject to the remainder of this Schedule 4.15, the [***] Fees will be payable until the earlier of the following: (i) expiration or abandonment of the last Valid Claim of any of the [***] Patents existing as of the Original Effective Date, or (ii) the tenth (10th) anniversary of the First Commercial Sale of such [***] Product.

3. **Payment Schedule**. The Institute will pay to Licensee all [***] Fees owed or payable to Licensee quarterly on or before February 28 (for the Calendar Quarter ending December 31), May 31 (for the Calendar Quarter ending March 31), August 31 (for the Calendar Quarter ending June 30) and November 30 (for the Calendar Quarter ending September 30) of each calendar year. Each payment will be for [***] Fees accrued within the Institute's most recently completed Calendar Quarter.

4. **Currency**. All consideration due Licensee under this Schedule 4.15 will be payable and will be made in United States dollars by wire transfer to an account designated by Licensee.

5. **[***] Fee Reports**. Beginning with the earliest of: (i) First Commercial Sale of a [***] Product; (ii) execution of a [***] License Agreement; or (iii) any other exploitation or commercialization of the [***] Patents, within [***] following the end of the Calendar Quarter such event occurred, Institute shall make quarterly reports to Licensee on or before each February 28, May 31, August 31 and November 30 of each year. Each report will cover the Institute's most recently completed Calendar Quarter and will show all information used by Institute to calculate the [***] Fees owed to Licensee for such calendar quarter.

6. **Taxes**. [***] Fees and other consideration accrued in any country outside the United States may be reduced by any taxes, fees or other charges imposed on the [***] Fees by the government of such country.

7. **Late Payments**. If [***] Fees are not received by Licensee when due, the Institute will pay to Licensee interest at a rate of the lesser of: (a) [***] or (b) the maximum rate permitted by Law. Such interest will be calculated from the date payment was due until actually received by Licensee.

Schedule 13.2

[***]

[***] = Certain information contained in this document, marked by brackets, has been omitted because it is both not material and would be competitively harmful if publicly disclosed.

Exhibit 10.2

EXECUTION VERSION

THIRD AMENDED AND RESTATED RESEARCH AND DEVELOPMENT COLLABORATION AGREEMENT

BETWEEN

THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH

AND

ATARA BIOTHERAPEUTICS, INC.

Table of Contents

THIRD AMENDED AND RESTATED RESEARCH AND DEVELOPMENT COLLABORATION AGREEMENT

This Third Amended and Restated Research and Development Collaboration Agreement ("**Third Restated Agreement**"), entered into on August 26, 2020 ("**Execution Date** "), and effective as of the Execution Date, is made by and between **Atara Biotherapeutics, Inc.**, having its principal offices at 611 Gateway Blvd #900, South San Francisco, CA 94080, ("**Atara**"), and the **Council of the Queensland Institute of Medical Research**, a not-for-profit Institute organized and existing under the laws of the State of Queensland having its principal offices at 300 Herston Rd, Herston QLD 4006, Australia ("**Institute**"). Each of Atara and Institute are referred to in this Agreement as a "**Party**", and collectively as the "**Parties**"

WHEREAS, Institute has conducted certain research and development, and possesses certain expertise relating to the research and development of, among other things, allogeneic and autologous cytotoxic T-lymphocytes ("**CTL**"), including in relation to the development of novel therapies targeting tumor and other cells infected with certain viruses, for use in oncology and autoimmune indications.

WHEREAS, Atara is a biotechnology company developing novel therapies for commercialization for the treatment of human diseases and conditions.

WHEREAS , the Parties desire to collaborate in relation to research and development activities in accordance with the terms and conditions set forth herein.

WHEREAS, the Institute is uniquely qualified to conduct the proposed research and the research is within Institute's mission and it is in the mutual interest of Atara and Institute that Institute continues to progress certain research and development activities in accordance with the terms and conditions set forth herein.

WHEREAS, Atara and Institute are parties to that certain Research and Development Collaboration Agreement (the "**Original Research Agreement**"), entered into on October 20, 2015 (the "**Original Effective Date** "), which was amended and restated as of September 23, 2016 (the "**First Restatement Date**") pursuant to that certain Amended and Restated Research and Development Collaboration Agreement and was subsequently amended on December 15, 2017, April 24, 2018 and May 9, 2018 (as so amended, the "**First Restated Agreement**") effective as of the Original Effective Date, which was, in turn, amended and restated as of August 28, 2019 (the "**Second Restatement Date**") pursuant to that certain Second Amended and Restated Research and Development Collaboration Agreement (the "**Second Restated Agreement**"), and now the Parties desire to amend and restate the Second Restated Agreement in its entirety to, among other things, [***] [***], all as set forth in this Third Restated Agreement; and

WHEREAS, the Parties desire that intellectual property rights and technology developed as a result of activities conducted under this Agreement be licensed to Atara for the further development and commercialization of CTL products based on novel allogeneic and autologous CTLs for use in the diagnosis, treatment, prophylaxis and palliation of diseases and conditions associated with EBV, and to that end, the Parties entered into the that certain exclusive License Agreement (the "**Original License Agreement**") simultaneous with the Original Research

Agreement on the Original Effective Date, which Original License Agreement was amended and restated as of the First Restatement Date pursuant to that certain Amended and Restated Exclusive License Agreement ("**First Restated License Agreement**"), which was, in turn, amended and restated on the Second Restatement Date pursuant to that certain Second Amended and Restated Exclusive License Agreement ("**Second Restated License Agreement**"), and the Second Restated License Agreement is being amended and restated in its entirety pursuant to that certain Third Amended and Restated Exclusive License Agreement simultaneously with entering into this Third Restated Agreement (the "**Third Restated License Agreement**").

NOW, THEREFORE, Institute and Atara hereby agree to the following terms and conditions in this Agreement:

1. **DEFINITIONS**

The following capitalized terms shall have the meanings set forth in this Article 1. Capitalized terms not defined in this Article 1 or elsewhere in this Agreement shall have the meaning given to such terms in the License Agreement.

1.1 "**Affiliate**" shall have the meaning given in the License Agreement.

1.2 "**Agreement**" means the First Restated Agreement as in effect from the Original Effective Date until the Second Restatement Date, together with the Second Restated Agreement as in effect from the Second Restatement Date until the Execution Date, together with this Third Restated Agreement, which, pursuant to Article 19 replaces the Second Restated Agreement as of the Execution Date.

1.3 "**Alliance Manager**" shall have the meaning given in Section 3.2(a).

1.4 "**Allogeneic CTL**" shall have the meaning given in the License Agreement.

1.5 "**Allogeneic CTL Products**" shall have the meaning given in the License Agreement.

1.6 "**Allogeneic Programs**" means (a) the research and development activities being performed by Institute and Atara pursuant to this Agreement directed to the identification and development of Allogeneic CTL Products, including the Allogeneic EBV CTL Program, and (b) the research and development activities conducted under each New Research Program pursuant to Section 2.3 that is directed to the identification and development of New CTL Products comprising Allogeneic CTLs for use in any Indication.

1.7 "**Atara Forecast**" shall have the meaning given in Section 2.7(c).

1.8 "**Atara Forecast Quantity**" shall have the meaning given in Section 2.7(c).

1.9 "**Atara Indemnitees"** shall have the meaning given in Section 12.2.

1.10 "**Atara Inventions**" shall have the meaning given in Section 9.1.

1.11 "**Autologous CTL**" shall have the meaning given in the License Agreement.

1.12 "**Autologous CTL Products**" shall have the meaning given in the License Agreement.

1.13 "**Autologous Programs**" means (a) the research and development activities being performed by Institute and Atara pursuant to this Agreement directed to the identification and development of Autologous CTL Products, including the Autologous EBV CTL Program, and (b) the research and development activities conducted under each New Research Program pursuant to Section 2.3 that is directed to the identification and development of New CTL Products comprising Autologous CTLs for use in any Indication.

1.14 "**Background IP**" shall have the meaning given in the License Agreement.

1.15 "**BKV/JCV**" shall have the meaning given in Section 1.19.

1.16 "**BKV/JCV CTL Budget**" shall have the meaning given in Section 2.6(d).

1.17 "**BKV/JCV CTL Development Plan**" means [***].

1.18 "**BKV/JCV CTL Program**" means [***].

1.19 "**BKV/JCV Program**" means the New Research Program including New CTL Products Specifically Directed to a Target that is associated with BK polyoma virus ("**BKV**") and/or JC Polyomavirus ("**JCV**"), [***].

1.20 "**Claims**" shall have the meaning given in Section 12.1.

1.21 "**CMV**" means cytomegalovirus (including all naturally occurring variants thereof).

1.22 " **CMV CTL Program** " shall have the meaning given in Section 4.3.

1.23 "**CMV [***] Development Plan**" shall have the meaning given in Section 2.6(e).

1.24 "**Calendar Quarter**" means each successive period of three (3) consecutive calendar months ending on the last day of March, June, September, or December, respectively; provided that, the final Calendar Quarter shall end on the last day of the Term.

1.25 "**Commercially Reasonable Efforts**" means, with respect to the efforts to be expended by a Party or its Affiliate with respect to any objective, activity or decision to be undertaken under this Agreement, those efforts that a company or institution developing technology within the bio-pharmaceutical industry of comparable size and resources would reasonably use to accomplish such objective, activity or decision under similar circumstances, and specifically means the carrying out of development activities using efforts that a company or institution developing technology within the bio-pharmaceutical industry of comparable size and resources would reasonably devote to a product at a similar stage in its development or product life, taking into consideration, among other factors, efficacy, safety, approved labeling, the patent and other proprietary position of the product, and the likelihood of regulatory approval given the regulatory structure involved. Commercially Reasonable Efforts shall be determined on a Major Market-by-Major Market and indication-by-indication basis for the Products being developed under the Research Collaboration, and it is anticipated that the level of effort will change over time, reflecting changes in the status of each such Product, including with respect to any Product that is the subject of Autologous Programs.

1.26 "**Confidential Information**" of a Party, means (a) information relating to the business, operations or products of a Party or any of its Affiliates, including any know-how, that such Party discloses, transfers or makes available to the other Party under this Agreement or the License Agreement, or which otherwise becomes known to the other Party by virtue of this Agreement or the License Agreement, in each case whether in written, oral, graphical, machine readable or other form, whether or not marked as confidential or proprietary, and (b) the terms of this Agreement and the License Agreement;

1.27 "**CTL**" shall have the meaning given in the Recitals hereto.

1.28 "**CTL Product**" shall have the meaning given in the License Agreement.

1.29 "**Data**" shall have the meaning given in Section 8.1.

1.30 "**Designated Executive Officers**" means the Director and Chief Executive Officer of Institute, and the Chief Executive Officer of Atara.

1.31 "**Development Plan** " means the plan, on a Program-by-Program basis for the research and development activities to be conducted pursuant to this Agreement for the time periods reflected in such plan, as prepared and updated in accordance with Section 2.2, including the budget for such activities.

1.32 "**Dispute**" shall have the meaning given in Section 14.1.

1.33 "**EBNA1**" means Epstein Barr nuclear antigen 1.

1.34 "**EBV** " mean Epstein Barr Virus (including all naturally occurring variants thereof).

1.35 "[***] **Development Plan**" shall have the meaning given in Section 2.6(e).

1.36 "**Existing Confidentiality Agreement**" shall have the meaning given in Section 6.2.

1.37 "**Final Report**" shall have the meaning given in Section 8.1.

1.38 "**First Restated Agreement**" shall have the meaning given in the recitals hereto.

1.39 "**First Restated License Agreement**" shall have the meaning given in the recitals hereto.

1.40 "**First Restatement Date**" shall have the meaning given in the recitals hereto.

1.41 "**FTE**" means the equivalent of the work of one (1) full-time employee of a Party or its Affiliates for one (1) year (consisting of 1540-1920 hours per year) in directly conducting activities under this Agreement. Any Party's employee who devotes fewer than 1540 hours per year on the applicable activities shall be treated as an FTE on a pro-rata basis, calculated by dividing the actual number of hours worked by such employee on such activities by 1920. Any employee who devotes more than 1920 hours per year on the applicable activities shall be treated as one (1) FTE. For the avoidance of doubt, FTE shall not include the work of general corporate or administrative personnel, except for the portion of such personnel's work time actually spent on conducting scientific or technical activities related to the Research Collaboration.

1.42 "**FTE Rate**" shall mean the rates mutually agreed by the Parties for the engagement of specified FTEs, as set forth on Schedule 1.15.

1.43 "**HPV**" shall have the meaning given in Section 2.6(a).

1.44 "**HPV CTL Budget**" shall have the meaning given in Section 2.6(b).

1.45 "**HPV CTL Development Plan**" shall have the meaning given in Section 2.6(a).

1.46 "**HPV CTL Program**" shall have the meaning given in Section 2.6(a).

1.47 "**Indication**" means any disease or condition, or sign or symptom of a disease or condition.

1.48 "**Initial EBV Indications**" shall have the meaning given in Section 2.1(a).

1.49 "**Institute Background IP Improvements**" shall have the meaning given in Section 9.4.

1.50 "**Institute Indemnitees**" shall have the meaning given in Section 12.1.

1.51 "**Institute Inventions**" shall have the meaning given in Section 9.1.

1.52 "[***] **Programs** " means, collectively, the CMV [***] Program and the [***] Program (each as defined in the License Agreement).

1.53 "**Interim Reports**" shall have the meaning given in Section 8.1.

1.54 "**Inventions**" shall have the meaning given in Section 9.1.

1.55 "**Joint Inventions**" shall have the meaning given in Section 9.2.

1.56 "**Joint Steering Committee**" or "**JSC**" shall have the meaning given in Section 3.1.

1.57 "**License Agreement** " means the First Restated License Agreement as in effect from the Original Effective Date until the Second Restatement Date, together with the Second Restated License Agreement as in effect from the Second Restatement Date until the Execution Date, together with the Third Restated License Agreement effective as of the Execution Date.

1.58 "**Licensed Products**" shall have the meaning given in the License Agreement.

1.59 "**LMP1**" means latent membrane protein 1.

1.60 "**LMP2**" means latent membrane protein 2.

1.61 "**Losses**" shall have the meaning given in Section 12.1.

1.62 "**Major Market**" shall have the meaning given in the License Agreement.

1.63 "**MS**" shall have the meaning given in Section 2.1(a).

1.64 "**MSK Agreement**" shall have the meaning given in the License Agreement.

1.65 "**New CTL Products**" shall have the meaning given in Section 2.3(a).

1.66 "**New Research Information Package**" shall have the meaning given in Section 2.3(b).

1.67 "**New Research Programs**" shall have the meaning given in Section 2.3(a).

1.68 "**New Research Proposal**" shall have the meaning given in Section 2.3(b).

1.69 "**NHL**" shall have the meaning given in Section 2.1(a).

1.70 "[***]" shall have the meaning given in Section 2.1(a).

1.71 "**Option**" shall have the meaning given in the License Agreement.

1.72 "**Original Research Agreement**" shall have the meaning given in the recitals hereto.

1.73 "**Original License Agreement**" shall have the meaning given in the recitals hereto.

1.74 "**Other Work**" shall have the meaning given in Section 5.2.

1.75 "**Principal Investigator**" means Professor Rajiv Khanna.

1.76 "**Program**" means, on a Target-by-Target basis, any and all preclinical development, clinical development, manufacturing and commercialization activities with respect to any and all products directed to such Target. Programs include (a) the Allogeneic Programs, (b) the Autologous Programs and (c) any New Research Programs.

1.77 "**Program [***]s**" shall have the meaning given in Section 2.3(a).

1.78 "[***] **Payment**" shall have the meaning given in Section 2.7(a).

1.79 "[***] **Capacity**" shall have the meaning given in Section 2.7(a).

1.80 "[***] **Period**" shall have the meaning given in Section 2.7(b).

1.81 "**Regulatory Approval**" means with respect to a country or region, any and all approvals, licenses, registrations or authorizations of any Regulatory Authority necessary to commercially distribute, sell or market a product developed or commercialized under this Agreement or the License Agreement in such country or region, including, where applicable: (a) pre- and post-approval marketing authorizations; (b) labeling approval; and (c) technical, medical and scientific licenses, in each case necessary for commercial distribution, sale or marketing of such product in such country or region.

1.82 "**Regulatory Authority**" means any Government Authority or other entity, in each case regulating or otherwise exercising authority with respect to the development, manufacturing or commercialization of a given product under this Agreement or the License Agreement in a given country or region, including the U.S. Food and Drug Administration ("**FDA**"), or any successor thereto, and the European Medicines Agency ("**EMA**"), or any successor thereto.

1.83 "**Research Collaboration**" shall have the meaning given in Section 2.1.

1.84 "**Research Milestone**" shall have the meaning given in Section 4.4(a).

1.85 "**Research Milestone Payment**" shall have the meaning given in Section 4.4(a).

1.86 "**Rules of Arbitration**" shall have the meaning given in Section 14.2.

1.87 "**Second Restated Agreement**" shall have the meaning given in the recitals hereto.

1.88 "**Second Restated License Agreement**" shall have the meaning given in the recitals hereto.

1.89 "**Second Restatement Date**" shall have the meaning given in the recitals hereto.

1.90 "**Specifically Directed**" shall have the meaning given in the License Agreement.

1.91 "**Target**" means an antigen expressed on or in a cell, including [***]. For clarity, a Target may be [***] (collectively, a single "**Target**"). Unless otherwise specified, where the antigen is naturally occurring, a Target [***]. For clarity, (a) where a CTL Product is [***] antigen expressed on or in a cell in association with [***] EBV, [***], and (b) where a CTL Product is [***] associated with a [***] on or in a cell in association with the presence of, or infection of such cell by, EBV, or [***] with EBV, [***].

1.92 "**Term**" shall have the meaning given in Section 15.1.

1.93 "**Territory**" means worldwide.

1.94 "**Third Party**" means any Person (as defined in the License Agreement) other than Institute, Atara or any of their respective Affiliates.

1.95 "**Third Restated License Agreement**" shall have the meaning given in the recitals hereto.

1.96 "[***]" shall have the meaning given in the License Agreement.

1.97 "[***] **Milestone**" shall have the meaning given in Section 4.4(b).

1.98 "[***] **Period**" shall have the meaning given in the License Agreement.

1.99 "[***] **Milestone Payment**" shall have the meaning given in Section 4.4(b).

1.100 " [***] **Budget**" shall have the meaning given in Section 2.6(f).

1.101 "[***] **Development Plan**" shall have the meaning given in Section 2.6(e).

1.102 "**Wind Down Activities**" shall have the meaning given in Section 15.5(b).

2. SCOPE OF THE COLLABORATION

2.1 **Scope**. Pursuant to this Agreement, as further provided in this Article 2, during the Term:

(a) Atara and Institute shall collaborate to conduct the Allogeneic Programs as set forth in Section 2.2 and the Development Plan, with the intention of identifying and developing CTL Products Specifically Directed to (i) Targets expressed in association with EBV, including [***], and such other Targets as may be incorporated in the Development Plan, for use in the diagnosis, prophylaxis, treatment and palliation of (A) multiple sclerosis ("**MS**"), (B) [***] (collectively (A) through [***], the "**Initial EBV Indications**") and such other Indications as may be incorporated in the Development Plan, and (ii) such other Indications as the Parties may mutually agree in the Development Plan;

(b) Institute shall use Commercially Reasonable Efforts to conduct the Autologous Programs, as set forth in the Development Plan, with the intention of progressing the clinical development of Autologous CTL Products Specifically Directed to Targets expressed in association with EBV for the prophylaxis, treatment and palliation of [***] MS.

The foregoing activities, as well as any New Research Programs conducted by the Parties pursuant to Section 2.3, and activities conducted pursuant to the License Agreement, together, shall be the "**Research Collaboration**".

2.2 **Conduct of the Research Collaboration** . The Research Collaboration shall be conducted at Institute under the supervision of the Principal Investigator and commenced promptly after the Original Effective Date. Institute shall use Commercially Reasonable Efforts to conduct the Autologous Programs, and the Parties shall use Commercially Reasonable Efforts to conduct the Allogeneic Programs, in accordance with all applicable laws, rules and regulations, the terms and conditions of this Agreement, the Development Plan attached as Schedule 2.2 and incorporated by reference herein, and in the case of the Allogeneic Programs under the supervision of the JSC. Institute will furnish the facilities, know-how, and technical skills necessary for performance of the Research Collaboration. Anything in this Agreement to the contrary notwithstanding, Atara and Institute may at any time modify the scope of the Research Collaboration, including the Development Plan, by mutual written agreement in a document executed by duly authorized representatives of both Parties or otherwise expressly agreed to in writing by the Alliance Managers and representatives on the JSC of both Parties that states that it is effectuating such a modification.

2.3 **New Research**.

(a) During the term of this Agreement, if either Party wishes to pursue a program of activities directed to (i) the research and development of pharmaceutical or biologic products comprising Autologous CTLs or Allogeneic CTLs, or [***]s, in each case Specifically Directed to Targets that are not associated with EBV ("**New CTL Products**"), or (ii) the research and development of the [***] arising from the [***] Programs (the "**Program [***]**" as further defined in the License Agreement), (such research and development programs in (i) and (ii), each

a "**New Research Program**"), such Party may propose to the JSC that such New Research Program is included within the scope of the Research Collaboration.

(b) If the Parties, through the JSC, agree that a New Research Program should be investigated with a view to inclusion within the Research Collaboration, Institute shall prepare and present a proposal (a "**New Research Proposal** ") to the JSC for discussion. Any New Research Proposal shall include, at a minimum: (i) the Target(s) for such New CTL Products or Program [***], as applicable, (ii) a description of the proposed research and development activities, including an estimated timeline for such development, (iii) a good faith estimated budget for such development activities, (iv) a description of any material know-how, data, results or information in the possession and control of Institute that is necessary for Atara (and the JSC) to determine whether or not to pursue the New Research Program, and (v) a listing of the patent rights (including any such patent rights owned or controlled by any Third Party) that (A) cover or claim such New CTL Products or Program [***], or (B) Institute reasonably believes may be necessary or useful for the conduct of the proposed development activities, including in each case the owner or licensor under any Third Party patent rights, and (vi) any other information that Atara or the JSC may request in order to make a decision as to whether or not to progress the New Research Program (the information and materials in (i) through (vi), the "**New Research Information Package**"). Any such New Research Proposal shall be presented to the JSC no less than thirty (30) days prior to the JSC meeting at which such New Research Proposal is to be considered.

(c) The JSC shall discuss any New Research Proposal at the next JSC meeting following the delivery by Institute of the New Research Information Package, and shall determine whether the Parties should include the New Research Program within the scope of the Research Collaboration. A Party may withhold its consent to inclusion of any New Research Program within the scope of the Research Collaboration at its sole discretion. If the Parties mutually agree to progress any New Research Program, the Parties shall consult to prepare a formal development plan and budget for such New Research Program for review and approval by the JSC (subject to Atara's final decision making right under Section 3.3(f)).

(d) If the Parties agree to conduct a New Research Program, then within sixty (60) days following the finalization of the development plan and budget for such New Research Program (or such other timing as may be agreed to in writing by the Parties), such development plan and budget shall be added to and incorporated within the Development Plan and Budget, the Parties shall amend the License Agreement to provide that any New CTL Products and/or Program [***] shall be included within the scope of Licensed Products, and subject to the licenses granted pursuant to the License Agreement, and to make any other necessary amendments to the License Agreement in order to effect such change to the scope of Licensed Products, including, in the case of the New Research Program(s) including the Program [***], amendments to the economic terms applicable to Licensed Products arising from such New Research Program(s). With the exception of such amendments, all other terms and conditions of the License Agreement shall apply equally to any New CTL Product and the Program [***] as to any other Licensed Product, provided that (i) the Milestone Payments applicable to any such New CTL Product shall be those set forth in the column under the heading "Research Milestone Payments – Licensed Product Arising Directly From Activities under New Research Programs" in the table in Section 4.4(a) of this Agreement and under the heading "Milestone Payments – Licensed Product

Arising Directly From Activities under Research Agreement" in Section 4.3(a) of the License Agreement, and (ii) the Milestone Payments applicable to any such Program [***] shall be those set forth in the column under the heading "[***]" in the table in Section 4.4(b) of this Agreement and under the heading "Milestone Payments – Licensed Product Arising Directly From Activities under Research Agreement " in Section 4.3(a) of the License Agreement. Except for (A) any funding that Atara agrees to provide for research and development activities to be conducted under any New Research Program pursuant to this Agreement, and (B) amounts payable by Atara for any New Research Program including the Program [***], no other consideration shall be payable by Atara for the foregoing amendment of the License Agreement and the grant by Institute to Atara of exclusive license rights in New CTL Products and/or Program [***] arising from such New Research Program.

(e) If Institute provides Atara with a New Research Information Package pursuant to this Section 2.3, and Atara does not wish to fund such research and development activities, or include such research and development activities within the scope of the Research Collaboration, then subject to the terms and conditions of this Agreement and the License Agreement (including Section 7 (Certain Covenants) thereof), Institute may (i) pursue the research and development of such New Research Program independently or with any Affiliate, and/or (ii) shall be free to discuss terms and conditions for the grant of rights to any Third Party to participate in the research, development and commercialization of the New CTL Products that are the subject of such New Research Program, without further obligation to Atara with respect to such New Research Program. For clarity, this subsection (e) shall not apply to any New Research Programs including the Program [***], which shall instead be subject to Section 2.6(e) below.

2.4 **Diligence**. Each Party shall use Commercially Reasonable Efforts to conduct the Research Collaboration by performing the activities allocated to such Party pursuant to this Agreement and the Development Plan (including any activities relating to New Research Programs that the Parties mutually agree to include within the scope of the Research Collaboration).

2.5 **Regulatory Activities**. Atara shall be solely responsible, at Atara's expense, for preparing all submissions to any regulatory authority and making all regulatory filings in the Territory in relation to CTL Products arising from (a) activities conducted with respect to the Allogeneic CTL Programs, (b) activities conducted with respect to the Autologous CTL Programs, and (c) New CTL Products and Program [***] arising out of New Research Programs conducted hereunder, in each case in accordance with Section 5.5 of the License Agreement. Institute was solely responsible at Institute's expense, for preparing all submissions to any regulatory authority and making all regulatory filings in the Territory in relation to CTL Products arising from activities conducted with respect to the Autologous CTL Programs prior to the exercise of the Option pursuant to Section 2.2 of the License Agreement.

2.6 **Specific New Research Programs**.

(a) **HPV CTL Program** . Following discussion through the JSC in accordance with Section 2.3, as of the First Restatement Date, the Parties agreed to include a research and development program directed to the identification and further development of New CTL Products Specifically Directed to such Targets expressed in association with human

papilloma virus ("**HPV**"), in such Indications as the Parties may mutually agree in writing from time to time (the "**HPV CTL Program** ") as a New Research Program within the scope of this Agreement. The HPV CTL Program shall be deemed to be an Allogeneic Program. The Parties have agreed upon a development plan for the HPV CTL Program (the "**HPV CTL Development Plan** "), which has been added to and incorporated within the Development Plan, and which the Parties may mutually agree in writing to update from time to time. Any Licensed Products arising as a result of activities under the HPV CTL Research Program shall be subject to the Research Milestone Payments set forth in the column of the table in Section 4.4(a) with the heading "Research Milestone Payment – Licensed Product Arising Directly From Activities under New Research Programs".

(b) **HPV CTL Program Funding** . The Development Plan shall include a mutually agreed budget for the HPV CTL Program (the "**HPV CTL Budget** "), which shall be added to and incorporated within the Budget as set forth in Section 4.2. Institute shall use Commercially Reasonable Efforts to ensure that the FTEs assigned to perform activities under the HPV CTL Program devote at least [***] of their total working time to activities under the HPV CTL Development Plan, unless otherwise mutually agreed by the Parties. The allocation of payments made by Atara to activities under the HPV CTL Program, and the timing of payments to be made to Institute out of such amount shall be set forth in the HPV CTL Development Plan. The Parties may mutually agree upon changes to the HPV CTL Budget (subject to Atara's final decision-making authority under Section 3.3(f) with respect to any increase thereto), or changes in the allocation of the HPV CTL Budget to activities under the HPV CTL Development Plan.

(c) **BKV/JCV CTL Program**. [***].

(d) **BKV/JCV CTL Program Funding**. [***].

(e) **[***] Programs**. Following discussion through the JSC in accordance with Section 2.3 , as of the First Restatement Date, the Parties agreed to include the [***] Programs as a New Research Program within the scope of this Agreement. For the purposes of this Agreement the [***] Programs shall be deemed to be Allogeneic Programs. The Parties previously agreed on a development plan setting out the research and development activities to be conducted for each of the [***] Programs during the [***] Period (the "[***] **Development Plan**", and the "[***] **Development Plan**", and collectively the "[***] **Programs Development Plan**". The Parties have agreed on a revised [***] Development Plan, along with a mutually agreed budget for such activities, as further set forth in subsection (f) below, which has been added to and incorporated within the Development Plan, and which the Parties may mutually agree in writing to update from time to time. If Atara exercises the [***] for the [***] Program pursuant to Section 2.6 of the License Agreement, such Program [***] will become Licensed Products, and such Licensed Products arising as a result of activities under the [***] Programs shall be subject to the applicable Research Milestone Payments set forth in the table in Section 4.4(b).

(f) **[***] Program Funding**.

(i) The [***] Programs Development Plan shall include a mutually agreed budget for each of the [***] Program and the [***] Program (each, a "[***] **Program Budget**"), which the Parties expect to cover all direct and indirect costs of the conduct of the [***] Programs during the [***] Period. The Parties agree that Atara has terminated the [***] for the [***] Program and that they have agreed on a [***] Program Budget for the [***] Program of [***] (the "**Final CMV [***] Budget**"), and that other than the amounts contemplated by the Final [***] Budget, Atara will have no further costs or payment obligations associated with the [***] Program, including any incremental wind-down or close-out costs.

(ii) Atara shall pay an annual amount set forth in the [***] Program Budget existing as at the Execution Date, or after the time period covered by such [***] Program Budget, as otherwise to be agreed by the Parties in accordance with subsection (iii) below, to be allocated against the costs set forth in each [***] Program Budget (each, a "[***] **Research Contribution**" and collectively the "[***] **Research Contribution**"). Institute shall use Commercially Reasonable Efforts to ensure that any FTEs assigned to perform activities under the [***] Programs devote at least [***] of their total working time to activities under the [***] Development Plan, unless otherwise mutually agreed by the Parties. The allocation of the [***] Research Contribution to activities under each of the [***] Programs prior to June 30, 2019 shall be at Institute's discretion and thereafter shall be allocated solely to the [***] Program, and the timing of payments to be made to Institute out of such amount are as set forth in Section 2.6 of the License Agreement. The Parties may mutually agree upon changes to the [***] Research Contribution (subject to Section 2.6(f)(iii) below with respect to a [***] Budget, and to Atara's final decision making authority under Section 3.3(f) with respect to any other increase thereto), or changes in the allocation of a [***] Budget to activities under the [***] Development Plan.

(iii) Following the Execution Date, the Parties shall discuss in good faith through the JSC and otherwise and may mutually agree upon an updated [***] Development Plan and an updated [***] Budget, in each case for the [***] Program, to cover such period and such matters and expenditures as are not covered in the [***] Development Plan and [***] Budget agreed as at the Execution Date. Thereafter, the Parties shall update the [***] Development Plan and the [***] Budget for the [***] Program at least annually. If, at any time during the term of this Agreement, the Parties are unable to agree upon either the content of the updated [***] Development Plan or the updated [***] Budget, then (A) Institute shall have the final decision with respect to the [***] Development Plan, and (B) Atara shall have the final decision with respect to the amount of the [***] Research Contribution to be provided by Atara to fund activities during the applicable time period, provided that in no event shall the [***] Research Contribution funded by Atara in any twelve (12) month period for which the [***] Budget is in dispute be less than the greater of (x) the highest amount offered by Atara by way of [***] Research Contribution during such failed negotiations for the applicable twelve (12) month period, and (y) the amount funded by Atara for the [***] Research Contribution for the most recent twelve (12) month period.

2.7 **[***] Manufacturing Support**.

(a) In addition to the funding provided by Atara for the HPV CTL Program and [***] Programs set forth in Section 2.6 , Atara paid to Institute a one-off lump-sum payment of [***] (the "[***] **Payment** "), which was used by Institute for [***] (the "[***] **Capacity**"). The QGEN New Capacity shall be used by Institute to provide manufacturing and related services to support activities under all Programs included within the Development Plan, including the HPV CTL Program and [***] Programs and any other New Research Programs that may be added to this Agreement from time to time.

(b) In consideration for the [***] Payment, until Institute has [***] necessary for the conduct of (a) [***] (as defined in the License Agreement) and (b) all other [***] set forth in the Development Plan that are [***] the first Licensed Product (including, for clarity, each of (i) the first EBV-Specific CTL Product and (ii) the first HPV-Specific CTL Product) arising from activities under the Research Agreement (the "[***] **Period**"), Institute shall utilize the [***] Capacity for manufacturing activities required under the Development Plan and any other New Research Programs in accordance with the following protocol.

(c) During the [***] Period, on a calendar quarterly basis Atara will issue to Institute in good faith rolling forecasts (each, an "**Atara Forecast**") of its requirements for use of the [***] Capacity for the following six months (the "**Atara Forecast Quantity**"). During the [***] Period, the [***] Capacity shall be used first to manufacture any amounts included in the Atara Forecast Quantity before it can be used for manufacturing services for any Third Party. If Institute wishes to utilize the [***] Capacity for any other activities during the [***] Period, including the performance of activities for Third Parties and/or outside the scope of the Programs included within the Development Plan, it may do so to the extent that such use is not allocated to the Atara Forecast Quantity, provided that Institute shall first obtains Atara's prior written consent to the use of such excess capacity, not to be unreasonably withheld or delayed. Without limiting the foregoing, Institute may not offer the [***] Capacity to any Third Party for services outside any time period covered by an Atara Forecast without Atara's prior written consent, which consent may not be unreasonably withheld or delayed.

3. **GOVERNANCE**.

3.1 **Management** . The Parties have established and shall maintain a cross-functional, joint steering committee (the "**Joint Steering Committee**" or the "**JSC**") which shall oversee the research collaboration between the Parties, including Allogeneic CTL Programs, Autologous Programs, and any agreed New Research Programs conducted under this Agreement and the License Agreement.

3.2 **Alliance Managers**.

(a) Each of Atara and Institute shall appoint one representative who possesses an understanding of development, regulatory, manufacturing and commercialization matters to act as its respective alliance manager(s) for this relationship (an "**Alliance Manager**"). Each Party may replace its respective Alliance Manager at any time upon written notice to the other in accordance with this Agreement. Any Alliance Manager may designate a substitute to

temporarily perform the functions of that Alliance Manager. Each Alliance Manager shall be charged with creating and maintaining a collaborative work environment within the JSC. Consistent with the Development Plan, each Alliance Manager, will also be responsible for (i) providing a primary single point of communication responsible for the flow of communication and for seeking consensus (both within such Party's organization and with respect to activities under this Agreement or the License Agreement) regarding key strategy and plan issues, and (ii) identifying and raising disputes to the JSC for discussion in a timely manner; and

(b) Each Alliance Manager shall have the right to attend all JSC meetings and meetings of any subcommittee thereof, as a nonvoting member. Each Alliance Manager may bring any matter to the attention of the JSC where such Alliance Manager reasonably believes that such matter requires attention of the JSC.

3.3 **Joint Steering Committee**.

(a) Composition. The Joint Steering Committee shall be comprised of two (2) named representatives of each Party (or such other number as the Parties may agree) in addition to each Party's Alliance Manager who are members ex-officio. The JSC will be led by two (2) co-chairs, one (1) appointed by each of the Parties. Each Party may replace one or more of its representatives, in its sole discretion, effective upon written notice to the other Party of such change.

(b) Function and Powers of the JSC. The JSC shall, in line with the terms and conditions set forth in the Agreement:

(i) define the scope of the research and development activities to be conducted under this Agreement, including by reviewing and approving the initial Development Plan, and each update to the Development Plan and associated Budget, and review progress against the goals in such Development Plan;

(ii) discuss and agree upon the allocation of the Budget to activities under the Development Plan;

(iii) discuss and comment on updates provided by Institute in relation to the Autologous Programs;

(iv) review and discuss proposals for new Indications for Licensed Products to be included within the activities under the Development Plan;

(v) review and discuss potential Targets for consideration as potential New Research Programs;

(vi) consider, discuss and make recommendations with respect to proposals for New Research Programs;

(vii) discuss Atara's regulatory strategy for IND filing for CTL Products;

(viii) validate and back up the intellectual property strategy;

(ix) review and track publications and proposed publications, and coordinate review and comments on proposed publications by each Party;

(x) establish subcommittees, as appropriate, and support the operation of such subcommittees, including by seeking to resolve disputed matters that may arise at the subcommittees;

(xi) assume a general role of leadership in the collaboration; and

(xii) perform any and all tasks and responsibilities that are expressly attributed to the JSC under this Agreement.

Notwithstanding the foregoing roles and responsibilities, unless expressly set forth in this Agreement or the License Agreement, the JSC shall serve solely as a forum for information exchange with respect to any matters that relate to (i) regulatory matters, including the regulatory strategy and filings for Regulatory Approvals in the Territory, (ii) commercialization of CTL Products (whether or not arising out of this Agreement), (iii) changes to the Budget for activities under the Development Plan with respect to Allogeneic CTL Programs or New Research Programs, and (iv) subject to Article 13 of the License Agreement, intellectual property strategy, including prosecution, maintenance and enforcement activities.

(c) Frequency of Meetings. The JSC shall meet at least once per quarter or more or less often as otherwise agreed by the Parties, and such meetings may be conducted by telephone, videoconference or in person as determined by the co-chairs, provided that no less than two (2) meetings during each calendar year shall be conducted in person. As appropriate, and provided that not less than two (2) business days' prior written notice has been given to the other Party, other employees of the Parties may attend Joint Steering Committee meetings as observers, but a Party shall not bring a Third Party to a meeting without the other Party's prior consent. Each Party may also call for special meetings of the JSC with reasonable prior written notice (it being agreed that at least five (5) business days shall constitute reasonable notice) to resolve particular matters requested by such Party and within the decision-making responsibility of the JSC. Each co-chair shall ensure that its JSC members receive adequate notice of such meetings. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

(d) Subcommittees. The JSC may establish and disband such subcommittees as deemed necessary by the JSC. Each such subcommittee shall consist of the same number of representatives designated by each Party, which number shall be mutually agreed by the Parties. Each Party shall be free to change its representatives on written notice to the other Party or to send a substitute representative to any subcommittee meeting. Each Party's representatives and any substitute for a representative shall be bound by the obligations of confidentiality set forth in Article 6. Except as expressly provided in this Agreement, no subcommittee shall have the authority to bind the Parties hereunder and each subcommittee shall report to the JSC. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

(e) Cooperation. Each Party shall provide the JSC such information as required under the Development Plan, or as reasonably requested by the other Party and reasonably available, relating to the progress of the goals or performance of activities under the Development Plan.

(f) Decisions. Other than as set forth herein, in order to make any decision required of it hereunder, the JSC must have present (in person, by videoconference or telephonically) at least the co-chair of each Party (or his/her designee for such meeting). Decisions of the JSC shall be by consensus, with each Party having one (1) vote. If the JSC cannot reach consensus or a dispute arises which cannot be resolved within the JSC within [***], the co-chair of either Party may cause such dispute to be referred to the Designated Executive Officers for resolution within [***]. In the event that consensus cannot be reached with respect to a decision after a meeting of the Designated Executive Officers, then, if the decision relates to (A) commercialization of any CTL Product, New CTL Product or [***] that has been included within the License Agreement pursuant to Section 2.3(d), including regulatory strategy for any such CTL Products, New CTL Products or [***] , (B) changes to the Development Plan that would require a material change in the scope of activities for any Program thereunder, or an increase in the Budget for development activities relating to the Allogeneic CTL Programs or the Autologous CTL Programs, including any increase in the Budget pursuant to this Agreement (where Atara has not previously authorized such increase), or (C) the scope of research and development activities under, or budget for, any New Research Program, including whether or not to include such New Research Program within the Research Collaboration, the final decision will be made by [***]. If a dispute arises which cannot be resolved by a subcommittee, the co-chair of either Party may cause such dispute to be referred to the JSC for resolution.

(g) Exceptions. Notwithstanding the foregoing, (i) [***] may not use its final decision making authority to require [***] to the Research Collaboration, without [***]'s prior written consent, and (ii) neither Party in exercising its right to finally resolve a dispute pursuant to Section 3.3(f) shall have any power to (A) cause the other Party to violate any Applicable Law or to breach any agreement between such other Party and any Third Party, or (B) to amend, modify, or waive compliance with the terms of this Agreement.

(h) Authority. The JSC and any subcommittee shall have only the powers assigned expressly to it in this Article 3 and elsewhere in this Agreement, and shall not have any power to amend, modify or waive compliance with this Agreement. In furtherance thereof, each Party shall retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers or discretion shall be delegated or vested in the JSC or subcommittee unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing.

(i) Discontinuation of JSC. The JSC shall continue to exist until the first to occur of (i) the Parties mutually agreeing to disband the JSC or (ii) until the termination or expiration of the License Agreement.

4. BUDGET; MILESTONES; PAYMENT

4.1 [Reserved]

4.2 **Budget**. Atara shall pay Institute the amounts set forth in the mutually agreed upon budget set forth in Schedule 4.2 (the "Budget"), incorporated herein, to cover all direct and indirect costs of the Allogeneic Programs, EBV Autologous Program and HPV CTL Program, [***] for which budgeting and funding shall be subject to Section 2.6(d) and excluding the [***] Programs, for which budget and funding shall be subject to Section 2.6(f) . The Parties may mutually agree upon changes to the Budget or changes in the allocation of the Budget to activities under the Development Plan by mutual written agreement in a document executed by duly authorized representatives of both Parties or otherwise expressly agreed to in writing by the Alliance Managers and representatives on the JSC of both Parties that states that it is effectuating such changes.

4.3 **Changes to the Budget**. During the term of this Agreement, the Parties may discuss, subject to Atara's final decision making authority pursuant to Section 3.3(f) with respect to the Research Collaboration and any New Research Programs other than the [***] Programs, increases to the Budget for the Research Collaboration, which may include, without limitation, increases in the number of Institute FTEs allocated to perform activities hereunder. For clarity, any budget increases for the [***] Programs shall be subject to Section 2.6(f)(iii) . For the avoidance of doubt , the Parties agree that as of the Effective Date, there is [***].

4.4 **Research Milestones**.

(a) As additional consideration for Institute entering into this Agreement and diligently progressing the activities under the Research Collaboration in accordance with this Agreement, Atara has paid, or will pay to Institute the research milestone payments (each, a "**Research Milestone Payment**") set forth in the table below for each Allogeneic CTL Product and/or Autologous CTL Product (as applicable pursuant to the table set forth below) to achieve the corresponding milestone (each, a "**Research Milestone**"), whether achieved by Institute, Atara or an Affiliate or sublicensee of Atara. The Party achieving such Research Milestone shall promptly notify the other Party in writing of the achievement of any such Research Milestone and Atara shall pay Institute in full the corresponding Research Milestone Payment within [***] of such achievement. For clarity, each Research Milestone Payment is payable once only for each Allogeneic CTL Product and once for each Autologous CTL Product, and each Research Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute. The Parties acknowledge and agree that as of the Execution Date, Atara has paid the Research Milestone Payment for First Dosing in a Human Subject for a CTL Product Specifically Directed to EBV for a first Allogeneic CTL Product.

	Research Milestone Trigger Event	Research Milestone Payment	
		CTL Product Specifically Directed to [***]	**Licensed Product Arising Directly From Activities under New Research Programs**
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]

*Milestone payable only once with respect to each Allogeneic Licensed Product to achieve such Milestone.

**Milestone payable once for each Allogeneic CTL Product and for each Autologous CTL Product to achieve such Research Milestone.

(b) As consideration for Institute entering into this Agreement and diligently progressing the activities under the Research Collaboration with respect to the [***] Programs in accordance with this Agreement, Atara:

(i) paid to Institute a fixed fee of two million five hundred thousand dollars ($2,500,000) within fifteen (15) business days following the Original Effective Date (which fee is non-refundable and non-creditable against any other amounts due under this Agreement), and

(ii) will pay to Institute the following milestone payments with respect to research and development activities conducted under the [***] Program (each, a "[***] **Milestone Payment**") set forth in the table below for each [***] to achieve the corresponding milestone (each, a "[***] **Milestone**"), whether achieved by Institute, Atara or an Affiliate or sublicensee of Atara. The Party achieving such [***] Milestone shall promptly notify the other Party in writing of the achievement of any such [***] Milestone and Atara shall pay Institute in full the corresponding [***] Milestone Payment within thirty (30) days of such achievement. For clarity, each [***] Program Milestone Payment is payable once only for the first [***] to reach the applicable milestone event, and each [***] Program Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute.

	[***] Milestone Trigger Event	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]

(c) Unless a Research Milestone Payment or [***] Program Milestone Payment is specified as payable for more than one Indication in the tables in (a) and (b) above respectively, each Research Milestone Payment and [***] Program Milestone Payment will be payable by Atara only once, following the first time a given CTL Product or [***], as applicable, developed under this Agreement achieves the specified Research Milestone or [***] Milestone. For example, with respect to the Research Milestone Payments, Research Milestone 2 in the table above shall be payable for a given Allogeneic CTL Product upon the first dosing of a patient in a Phase II Clinical Trial in for treatment of [***], but shall not be payable for such Allogeneic CTL Product for any subsequent Phase II Clinical Trial in gastric cancer, MS (in any country), or for [***] (in [***]).

(d) Each time a Research Milestone or [***] Milestone (as applicable) is achieved, then any other Research Milestone Payments with respect to earlier Research Milestones or [***] Program Milestone Payments with respect to earlier [***] Milestones that have not yet been paid will be due and payable together with the Research Milestone Payment for the Research Milestone, or [***] Program Milestone Payments for the [***] Milestone, as applicable, that is actually achieved.

(e) If, with respect to a given CTL Product developed or commercialized under this Agreement or the License Agreement and a given Indication, Atara elects to progress the development and commercialization of an Autologous CTL Product in lieu of an Allogeneic CTL Product for such Indication, then (i) following the decision to progress development and commercialization of such Autologous CTL Product, Atara shall owe all subsequent Research Milestone Payments due for such Autologous CTL Product, and (ii) subsection (c) shall apply solely with respect to any Research Milestone Payments that are applicable to both Autologous CTL Products and Allogeneic CTL Products, and have not already been paid for the Allogeneic CTL Product.

4.5 **Other Payments**.

(a) Atara shall pay any amounts agreed to by Atara and included in the Budget to Institute on a Calendar Quarterly basis in advance, based on the allocation of such amounts to activities under the Development Plan for the applicable Calendar Quarter. Institute

shall submit invoices to Atara on a Calendar Quarterly basis, no later than [***] prior to the last day of each Calendar Quarter, setting forth the amounts payable for the upcoming Calendar Quarter and the activities to which such amounts are allocated under the Development Plan. The first invoice shall be due under this Agreement no later than thirty (30) days following the Original Effective Date. Each invoice shall be signed by an authorized official of Institute. Atara shall make payment by wire transfer to Institute's nominated bank account.

(b) Atara shall pay the [***] Program Research Contribution (and any other amounts agreed to by Atara and included in the [***] Program Budgets) as set forth in Section 2.6(c) and (d) of the License Agreement.

5. PRINCIPAL INVESTIGATOR AND PERSONNEL

5.1 **Principal Investigator.** For the purpose of this Agreement and pursuant to Institute policy, Principal Investigator shall be responsible for the administration, direction, and content of the Research Collaboration, including expenditures under the Budget, and revisions to the allocation and individual expenditures within the overall framework, and subject to the overall cap, of the Budget, in each case necessary to accomplish the Research Collaboration. Should the Principal Investigator leave Institute or otherwise become unavailable during the term of this Agreement, Institute may nominate a replacement. In the event that the Principal Investigator becomes unable or unwilling to continue the Research Collaboration, and a substitute reasonably acceptable to Atara is not available, Atara shall have the right to terminate the Research Collaboration and this Agreement by giving written notice to Institute.

5.2 **Other Commitments.** Except as otherwise agreed, it is further understood that Institute and the personnel performing the Research Collaboration may be or become involved in other activities and projects which entail commitments to other Third Parties ("**Other Work** "). The Principal Investigator and the personnel performing the Research Collaboration will use Commercially Reasonable Efforts to progress the Research Collaboration in accordance with terms of the Development Plan, including any timelines set forth therein. Institute and the personnel performing the Research Collaboration will each use their best efforts to avoid conflicts with the terms and obligations of this Agreement. The Principal Investigator will provide Atara with written notice as soon as practicable if he becomes aware of a conflict or potential conflict that may materially impose upon his ability to perform activities under the Development Plan and this Agreement. Nothing in this Agreement shall be construed to limit the freedom of Institute, or their researchers who are not participants in the Research Collaboration under this Agreement, from engaging in Other Work made under other agreements with other parties than Atara. Notwithstanding the foregoing, Institute and the Principal Investigator shall use all reasonable efforts to distinguish the research performed in connection with the Research Collaboration under this Agreement from all Other Work, and shall keep records pertaining to such Other Work separately from the records to be maintained pursuant to Article 8.

6. CONFIDENTIALITY

6.1 **Confidential Information**. Atara and Institute will treat and maintain the other Party's Confidential Information in confidence using at least the same degree of care as the receiving Party uses to protect its own proprietary and confidential information of a like nature

from the date of disclosure until [***] after the termination or expiration of this Agreement, provided that a Party may designate one or more specific, defined items of Confidential Information as 'Trade Secret', by giving written notice to the other Party briefly outlining its reasons why longer protection is warranted, and in such case the other Party shall protect such information indefinitely unless and until Section 6.4 applies. Confidential Information can be written, oral, or both.

6.2 **Relationship to Existing Confidentiality Agreement**. This Agreement supersedes that certain Confidential Disclosure Agreement entered into between Atara and Institute, dated May 28, 2015 (the "**Existing Confidentiality Agreement**"); provided that all "Confidential Information" disclosed by the disclosing party thereunder shall be deemed Confidential Information of the disclosing Party hereunder and shall be subject to the terms and conditions of this Agreement and the receiving party thereunder shall be bound by and obligated to comply with such terms and conditions as if they were the receiving Party hereunder. The foregoing shall not be interpreted as a waiver of any remedies available to the disclosing party as a result of any breach, prior to the Original Effective Date, by the receiving party, respectively, of its obligations pursuant to the Existing Confidentiality Agreement.

6.3 **Permitted Disclosure**. Atara and Institute may use and disclose the other Party's Confidential Information to their Affiliates, employees, agents, consultants, contractors, and, in the case of the Atara, its Sublicensees, in each case on a need to know basis for the purposes of such Affiliates, Sublicensees and Third Parties performing activities under this Agreement or the License Agreement, provided that such parties are bound by a like duty of confidentiality as that found in this Article 6. Furthermore, Atara may disclose Institute's Confidential Information to: (a) Atara's potential or actual collaborators, partners, licensees and Sublicensees, and (b) potential or actual investment bankers, acquirers, lenders or investors, and (c) advisors of Atara or any of the foregoing in (a) and (b); each of whom, prior to disclosure, must be bound by similar obligations of confidentiality and non-use as set forth in this Article 6.

6.4 **Limitations**. Nothing contained herein will restrict or impair, in any way, the right of Atara or Institute to use or disclose any of the other Party's Confidential Information:

(a) that recipient can demonstrate by written records was previously known to it prior to its disclosure by the disclosing Party;

(b) that recipient can demonstrate by written records is now, or becomes in the future, public knowledge other than through acts or omissions of recipient;

(c) that recipient can demonstrate by written records was obtained lawfully and without restrictions on the recipient from sources independent of the disclosing Party; and

(d) that a Party is required to disclose pursuant to applicable law, rule or regulation.

6.5 **Other Disclosures**. Atara or Institute also may disclose Confidential Information that is required to be disclosed: (i) to a governmental entity or agency in connection

with seeking any governmental or regulatory approval, governmental audit, or other governmental contractual requirement; or (ii) by law, provided that the recipient uses reasonable efforts to give the Party owning the Confidential Information sufficient notice of such required disclosure to allow the Party owning the Confidential Information reasonable opportunity to object to, and to take legal action to prevent, such disclosure. Notwithstanding anything to the contrary in this Agreement, Atara may disclose Confidential Information it receives pursuant to this Agreement, to its actual or potential investors, acquirors, advisors, Sublicensees, consultants and employees who are bound by obligations of confidentiality with respect thereto.

6.6 **Return of Information**. Upon expiration or termination of this Agreement (unless the License Agreement remains in effect), or the request of the disclosing Party, if earlier, Atara and Institute will destroy or return any of the disclosing Party's Confidential Information in its possession within [***] following the termination of this Agreement and provide each other with prompt written notice that such Confidential Information has been returned or destroyed. Each Party may, however, retain one (1) copy of such Confidential Information for archival purposes in non-working files. If the License Agreement remains in effect as of the date of termination or expiration of this Agreement, then all Confidential Information disclosed pursuant to this Agreement, if not returned or destroyed at the disclosing Party's request pursuant to this Section 6.6, shall be deemed Confidential Information subject to the terms and conditions of Article 22 of the License Agreement.

7. PUBLICATION

7.1 **Publication.** Either party, consistent with academic standards, may publish or present the Data (as defined in Article 8 below), provided such publication or presentation does not disclose the other party's Confidential Information. The Parties agree that any publication or presentation of Data shall appropriately cite the contributions of both Parties, using customary standards of scientific attribution. Each Party shall provide the other Party with a copy of such publication or presentation [***] prior to submission for presentation or publication to permit protection of any Confidential Information and/or patent rights, if desired and applicable. The other Party shall have [***], after receipt of said copies, to object to such proposed presentation or proposed publication because it includes patentable subject matter which needs protection or because it includes Confidential Information of such other Party. In the event that the other Party makes such objection, the publishing party shall refrain from making such publication or presentation for a maximum of [***] from date of receipt of such objection in order to allow the other Party to seek patent protection on any patentable Inventions included in the proposed publication or presentation, and the publishing Party shall remove the other Party's Confidential Information from such publication or presentation before submitting or presenting it to any Third Party. Atara further agrees that Institute shall have the first right to publish any results of the Research Collaboration, pursuant to the terms of this Article 7. In the case of Confidential Information of Atara being results of the Research Collaboration, Institute may publish a publication or presentation containing such information after taking into account any comments by Atara in good faith and after allowing Atara to seek patent protection in accordance with this Section 7.1, unless Atara (acting reasonably) designates such information as a 'Trade Secret'.

7.2 No Use of Names. Neither Party will use the name of the other Party or its employees in any advertisement, press release, or other publicity without prior written approval of the other Party.

8. REPORTS; RIGHTS IN DATA

8.1 **Reporting.** Each Party shall, in accordance with its established practice, keep complete and accurate records of the work performed under this Agreement, including all expenditures under the Budget. Institute shall provide Atara with a written report, prior to any meeting of the JSC, or at such other frequency as is mutually agreed to by the Parties (the "**Interim Reports**"). Such reports shall set forth, at a minimum: (a) the activities performed and to be performed under the Development Plan, (b) results generated during the conduct of the Research Collaboration, (c) any CTL Products or, New CTL Products or [***] identified, (d) the quality and quantity of any materials (including without limitation biological or chemical compounds or raw materials) transferred by either party for the purposes of progressing the Research Collaboration and (e) material expenditures of funds under the Budget, and (f) subject to any obligations of confidentiality to any Third Party, a summary of activities of Atara and its Affiliates relevant to the research and development of CTL Products outside the Research Collaboration, excluding information regarding Atara's activities under the MSK Agreement. Institute shall provide a comprehensive final written report of all activities conducted, and all results and data generated (collectively "**Data**") under the Autologous Programs, the Allogeneic Programs, and any New Research Programs within ninety (90) days after termination of this Agreement ("**Final Report**"). During the course of the Research Collaboration, Atara's representatives may consult informally with the Principal Investigator at his or her discretion and convenience regarding the Research Program. Atara shall also be required to provide Interim Reports in accordance with this Section 8.1, on a Program-by-Program basis: (i) for the Allogeneic Programs, following completion of Phase I Clinical Trials for the applicable Allogeneic Program(s), and (ii) for the Autologous Programs, in consultation with Institute.

8.2 **Rights in Data.** Institute shall own all Interim Reports and the Final Report, and information and data contained therein or arising from the activities conducted under this Agreement and the Development Plan. Subject to the provisions of Articles 6 and 7, Atara shall have the unencumbered right to use the Interim Reports and the Final Report[s], and any and all information and Data contained therein for any and all purposes, including the right to reference such Data and information in any regulatory filings in relation to any CTL Product, New CTL Product or Program [***] under this Agreement or the License Agreement, and shall have the right to grant or sublicense to others the right to so use and reference such Data and information.

9. INTELLECTUAL PROPERTY

9.1 **Ownership.** With the exception of the rights granted to Institute to perform its obligations under this Agreement, and the rights granted to Atara pursuant to the License Agreement, each Party shall retain all right, title and interest in and to its Background IP. Except as provided in Section 9.4, inventorship/authorship of all patents, copyrights, trade secrets and other intellectual property rights, in and to all tangible materials (including without limitation all biological materials), inventions, discoveries, and software conceived or first made in the performance of the Research Collaboration under this Agreement ("**Inventions**") will be

determined in accordance with U.S. patent/copyright law, such that all Inventions that are conceived or made solely by one or more employees of Atara in the course of the Research Collaboration and are not Improvements ("**Atara Inventions**") shall be owned solely by Atara and all Inventions which are conceived or made solely by one or more employees of Institute in performance of Research Collaboration and are not Improvements ("**Institute Inventions**") shall be solely owned by Institute.

9.2 **Joint Inventions**. Inventions that are jointly conceived or reduced to practice by one or more employees, consultants or contractors of each Party, shall be jointly owned by the parties (each such invention, a "**Joint Invention**"). Ownership of all Inventions shall vest in the party to whom the inventor has an obligation of assignment. Institute will obtain agreements securing the assignment to Institute of all Inventions and intellectual property rights from the Principal Investigator and all employees, other agents and consultants who perform any part of the Research Collaboration at Institute that are necessary to enable Institute to grant to Atara all rights Institute purports to grant under this Agreement and the License Agreement. Subject to the terms and conditions of the License Agreement, including any exclusive licenses granted thereunder (for such time as such licenses have effect), each Party shall have all rights under any jointly owned patent, patent application or other form of intellectual property protection relating to any Joint Invention to use, research, develop, and commercially exploit such Joint Invention and to license and sublicense Third Parties (through multiple tiers of sublicensing) to do so.

9.3 **Inclusion within the License Agreement** . All Institute Inventions arising under this Agreement shall be automatically included, upon their creation, within the Patent Rights and Know-How Rights under the License Agreement, and shall be subject to the terms and conditions of the License Agreement, provided that for clarity, Atara shall only have rights to practice under any such Institute Inventions in relation to [***] of the License Agreement.

9.4 **Improvements to Background IP**. Notwithstanding Sections 9.1 and 9.2, Institute shall be the sole owner of any Inventions that are claimed or covered by patents and patent applications claiming priority to any patent or patent application included in the Patent Rights, as such Patent Rights exist as of the Original Effective Date (such Inventions, the "**Institute Background IP Improvements**"). Atara shall assign, and hereby assigns to Institute, all of Atara's right, title and interest in and to the Institute Background IP Improvements. Without limiting the foregoing, Institute Background IP Improvements shall be included, upon their creation by either Party (or assignment by Atara to Institute in accordance with this Section 9.4, if applicable), within the Patent Rights, and shall be subject to the terms and conditions of the License Agreement, including the licenses granted therein.

9.5 **Option to License Atara IP**. In addition to such rights of reversion as are contained in the License Agreement, Atara will, prior to granting or offering to grant to any Third Party any license or other right to research, develop or commercially exploit any Atara Invention, first discuss with Institute in good faith for a period of not less than [***] whether, and on what terms, Institute may wish to use or license such Atara Invention in fields or applications not the subject of the License Agreement.

9.6 **Disclosure**. Institute will require the Principal Investigator and other investigators to promptly disclose all Inventions and Joint Inventions generated during the term of

this Agreement to Institute's Business Development Office in accordance with Institute policy with respect to ownership and disclosure of Inventions (and Joint Inventions). Institute or the Business Development Office of Institute, as applicable, will notify Atara promptly in writing following disclosure of a Institute Invention by any inventor, and disclose in confidence to Atara all Institute Inventions, including sufficient detail to enable Atara to evaluate such Institute Invention.

9.7 **Patent Filings**.

(a) Joint Inventions. Institute will use reasonable efforts to ensure that Atara has the first opportunity to file a patent application or application for other intellectual property protection on any Joint Inventions. Institute's rights in any Joint Invention shall be automatically included within the Know-How Rights or the Patent Rights, as applicable, under the License Agreement, and shall be subject to all of the terms and conditions of the License Agreement. Atara's prosecution and maintenance of any patents and patent applications arising from Joint Inventions shall be conducted in accordance with Section 13.2 of the License Agreement. If Atara elects not to file a patent application or application for other intellectual property protection on any Joint Inventions, or decides that it does not wish to provide financial support for the prosecution or maintenance of the protection for such Joint Inventions, Institute shall thereafter be free to file or continue prosecution or maintain any such application(s), and to maintain any protection issuing thereon in the U.S. and in any foreign country at Institute's sole expense and with no further obligation to Atara, and such patent or patent application shall not be included within the Patent Rights under the License Agreement.

(b) Inventions. Section 13.2 of the License Agreement shall apply to all filing, prosecution and maintenance of any patents and patent applications arising from Institute Inventions and Institute Background IP Improvements. Atara shall have the sole right, but not the obligation to file, prosecute and maintain patents and patent applications arising from the Atara Inventions.

9.8 Except as expressly provided herein or in the License Agreement, nothing contained in this Agreement shall be deemed to grant either directly or by implication, estoppel, or otherwise any license under any patents, patent applications, or other proprietary interests to any other invention, discovery, or improvement of either Party.

10. **EXCHANGE OF MATERIALS**

All materials, including any CTLs, including progeny and modified or unmodified derivatives, exchanged pursuant to this Agreement shall remain the property of the providing Party and shall be used solely for the purposes of the Research Collaboration, unless otherwise mutually agreed in writing. Upon expiration or termination of this Agreement, the unused portions of such materials will be returned promptly to the providing Party or will be disposed of as directed by the providing Party in writing.

11. SUPPLIES AND EQUIPMENT

In the event that Institute purchases supplies or equipment under the Budget for the Research Collaboration, title to such supplies and equipment shall vest in Institute, unless the Parties mutually agree otherwise in writing.

12. INDEMNIFICATION

12.1 **Atara Indemnification**. Atara agrees to indemnify, defend and hold harmless Institute and its trustees, officers, staff, representatives and agents ("**Institute Indemnitees**") against all damages, costs, expenses, losses and liabilities ("**Losses**") actually awarded by a court of competent jurisdiction or agreed in settlement, as a result of any third party claims, demands, suits, or other actions ("**Claims**") arising from (a) Atara's use of the Data or Inventions in connection with Atara's activities pursuant to the License Agreement, including the development and commercialization of CTL Products and any New CTL Products and Program [***] (in each case, if applicable), (b) Atara's breach of this Agreement or the Development Plan (including without limitation Atara's breach of its representations and warranties), (c) the negligent or wrongful acts or omissions or of any Institute officer, agent, or employee the negligent or intentional acts or omissions or breach of this Agreement (including without limitation Atara's breach of its representations and warranties) by Atara and its officers, agents, and employees; provided that Atara will have no obligation to indemnify Institute Indemnitees to the extent that any such Claim is based on Institute's negligence, willful misconduct or breach of this Agreement (including without limitation Institute's breach of its representations and warranties).

12.2 **Institute Indemnification**. Institute agrees, to the extent permitted by law, to indemnify, defend and hold harmless Atara and its stockholders, officers, staff, representatives and agents ("**Atara Indemnitees** ") against all Losses actually awarded by a court of competent jurisdiction or agreed in settlement, as a result of any Claims arising from (a) any activities related to the [***] Program occurring after June 30, 2019 and (b) any other CMV-related activities of Institute following the Execution Date; provided that Institute will have no obligation to indemnify Atara Indemnitees to the extent that any such Claim is based on Atara's negligence, willful misconduct or breach of this Agreement (including without limitation Atara's breach of its representations and warranties).

13. NOTICE

Except for the remittance of payments due pursuant to the terms hereof, whenever any notice is to be given hereunder, it shall be in writing and shall be deemed received, if delivered by courier on a business day, on the day delivered, or on the second business day following mailing, if sent by first-class certified or registered mail, postage prepaid, to the following addresses:

Institute: QIMR Berghofer Medical Research Institute
300 Herston Road,
Herston, QLD, 4006
Attention: Chief Operating Officer

Atara: **Atara Biotherapeutics, Inc.**
611 Gateway Blvd. #900
South San Francisco, CA 94080
Attn: General Counsel

14. DISPUTE RESOLUTION

14.1 **Executive Resolution**. The parties shall initially seek amicably to settle all disputes (each, a "**Dispute**") arising out of or in connection with this Agreement (including any Dispute relating to Development Plan and performance of activities thereunder) by negotiation, including discussion at the JSC, subject to the Parties' respective final decision making authority as set forth in Section 3.3(f). If, within [***] after written notice by either Party of the existence of a dispute, the Parties do not resolve such Dispute, then the Dispute shall be referred by the JSC to the Executive Officers from each Party for further negotiation. If the Designated Executive Officers of each Party cannot resolve such Dispute, then subject to Sections 3.3(f) and 14.7, such Dispute will be referred to final binding arbitration in accordance with Sections 14.2 through 14.6.

14.2 **Arbitration**. Any Dispute referred for arbitration shall be finally settled under the Rules of the International Centre for Dispute Resolution (the "**Rules of Arbitration**") then in force, by one arbitrator appointed in accordance with such Rules of Arbitration. The Arbitral Tribunal shall be guided by the IBA Rules on the Taking of Evidence in International Arbitration, and there shall be no depositions. The place of the arbitration shall be New York, New York, United States of America. The language of the arbitration shall be English.

14.3 **Selection of the Arbitrator**. Each arbitrator shall have [***] of experience in arbitrating disputes in the pharmaceutical industry, or of pharmaceutical licensing disputes and be admitted to practice law in the United States of America. The arbitrator conducting the arbitration must and shall agree to render an award within [***] after the final hearing. The arbitrator [***]. Without limiting any other remedies that may be available under Applicable Laws, the arbitrator shall have [***].

14.4 **Conduct of the Arbitration**. The Parties undertake to keep confidential all awards in their arbitration, together with all materials in the proceedings created for the purpose of the arbitration and all other documents produced by another Party in the proceedings not otherwise in the public domain, save and to the extent that disclosure may be required of a Party by legal duty or under Applicable Law, the rules and regulations of any stock exchange or quotation services on which such Party's stock is traded or quoted, to protect or pursue a legal right or to enforce or challenge an award in legal proceedings before a court or other judicial authority.

14.5 **Continued Performance**. Unless otherwise agreed in writing, the Parties will continue to perform their respective obligations under this Agreement during any arbitration or court proceeding seeking enforcement of an arbitral decision or award, and, unless this Agreement is in its entirety deemed null and void or is otherwise revoked or rescinded in its entirely, the Parties shall continue to perform their respective remaining obligations under this Agreement, and may continue to exercise their respective remaining rights and remedies thereunder, following any arbitration.

14.6 **Preliminary Injunctions**. Notwithstanding anything in this Agreement to the contrary, a Party may seek a temporary restraining order or a preliminary injunction from any court of competent jurisdiction in order to prevent immediate and irreparable injury, loss, or damage on a provisional basis, pending the decision of the arbitrator(s) on the ultimate merits of any Dispute.

14.7 **Patent Disputes**. Notwithstanding anything in this Agreement to the contrary, any dispute concerning inventorship that is not resolved within [***] following notice by one party to the other of the creation or reduction to practice of any Invention, and any dispute regarding any and all issues regarding the scope, construction, validity, and enforceability of any patent or patent application (including whether or not such patent or patent application should be included in the Patent Rights under the License Agreement) in a country within the Territory shall be determined in a court or other governmental authority of competent jurisdiction under the applicable patent laws of such country.

15. TERM AND TERMINATION

15.1 **Term**. This Agreement shall be effective from the Original Effective Date until all Research Milestone Payments under Section 4.4 have been paid, (the "**Term**"), unless earlier terminated in accordance with this Article 15.

15.2 **Termination of License Agreement**. This Agreement will terminate automatically in the event that the License Agreement is terminated, provided that prior to such termination of this Agreement becoming effective, the Parties shall cooperate to wind down the activities being conducted hereunder as set forth in Section 15.5(b).

15.3 **Termination for Failure of the Research Collaboration.** This Agreement may be terminated by Institute or Atara at any time upon the giving of thirty (30) days' prior written notice to the other if either party determines, in its discretion, that the Research Collaboration is no longer academically, technically, or commercially feasible.

15.4 **Termination for Material Breach**. In the event that either party materially breaches any of its obligations under this Agreement and shall fail to remedy such default within thirty (30) days after written notice thereof, the party not in default shall have the option of terminating this Agreement by giving written notice of termination with an immediate effect to the defaulting party.

15.5 **Effects of Termination.** Following termination, but not expiration of this Agreement, the following shall apply:

(a) Termination of this Agreement shall not affect the rights and obligations of the parties accrued prior to termination.

(b) Promptly following any notice of termination of this Agreement, the Parties shall meet, through the JSC, to discuss and agree upon the steps to be taken to wind down the activities being conducted under the Research Collaboration, (the "**Wind Down Activities**"). Unless requested in writing by Atara, agreed by the Parties to be included within the budget for any Wind Down Activities, or already committed to be paid by Institute on a non-cancelable basis prior to the date of notice of termination, Institute shall not incur any additional costs or expenses in conducting activities under this Agreement following the date of notice of termination. Atara agrees to reimburse Institute for (i) any non-cancelable obligations actually incurred by Institute prior to termination in accordance with the Research Collaboration, provided such amounts have been incurred in accordance with the Budget, and (ii) any costs incurred in relation to the Wind Down Activities thereunder as mutually agreed by the JSC. Following wind-down of the Research Collaboration, Atara shall have no further obligations to make any payments to Institute.

(c) All materials, information and data, including any Confidential Information, provided by one Party to the other Party pursuant to this Agreement shall be returned to the disclosing Party as set forth in Section 6.6 and Article 10.

(d) The Parties' rights in CTL Products, New CTL Products and [***] arising from the conduct of activities under this Agreement prior to the effective date of termination shall be subject to Sections 9.6(b), (c), (e), (f), (g) and (i), 9.7 and 9.9 of the License Agreement.

15.6 **Survival.** Upon termination or expiration of this Agreement, any provisions herein which are intended to continue and survive such termination or expiration, including Articles 1, 6, 7, 8, 9, 10, 12, 13, 14 and 16 through 23, and Sections 4.4 (to the extent that the License Agreement has not expired or terminated, and subject to Section 9.6(b) of the License Agreement) and 15.5 shall survive any expiration or termination of this Agreement.

16. APPLICABLE LAW

This Agreement shall be governed by the laws of the State of New York without regard to the conflict of law principles thereof. Any disputes arising hereunder shall be adjudicated accordance with Article 14.

17. WAIVER

No waiver by either Party of any breach or default of any of the agreements contained herein will be deemed a waiver as to any subsequent and/or similar breach or default. No waiver of this Agreement is valid or binding on the Parties unless made in writing (identifying the provision that is waived) and signed on behalf of each Party.

18. **ASSIGNMENT**

Neither party hereto may assign or transfer any rights or obligations under this Agreement without the prior written consent of the other party, except that no such consent shall be required for a party to assign its rights or transfer its obligations to its Affiliates or in connection with the sale or transfer of the majority of its stock or all or substantially all of its assets to which this Agreement relates, whether as part of a merger, acquisition, or asset sale. Any assignment in violation of this Agreement will be null and void. This Agreement benefits and binds the parties and their respective successors and permitted assigns.

19. **ENTIRE AGREEMENT**

This Agreement, together with the License Agreement, any Manufacturing Agreement executed by the Parties, and any Exhibits to any of the foregoing, represents the entire understanding of the Parties and supersedes any prior or contemporaneous agreements or understandings between Principal Investigator or Institute with Atara with respect to the subject matter hereof, including the Original Research Agreement, the First Restated Agreement, and the Second Restated Agreement. Furthermore, no modification, supplement, or new agreement may be executed, prior to the expiration of this Agreement, between Institute and Atara with respect to the subject matter hereof, without formal written amendment to this Agreement, signed by all Parties.

20. **INDEPENDENT CONTRACTOR**

In performing their respective duties under this Agreement, each of the Parties will be operating as an independent contractor. Nothing contained herein will in any way constitute any association, partnership, or joint venture between the Parties hereto, or be construed to evidence the intention of the Parties to establish any such relationship. Neither Party will have the power to bind the other Party or incur obligations on the other Party's behalf without the other Party's prior written consent.

21. **SEVERABILITY**

If any one or more of the provisions contained in this Agreement shall be held invalid, illegal, or unenforceable for any reason or in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions hereof, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

22. **CONSTRUCTION**

The headings of the Sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement. Except where the context otherwise requires, wherever used, the use of any gender will be applicable to all genders, and the word "or" is used in the inclusive sense. When used in this Agreement, "including" means "including without limitation". References to either Party include the successors and permitted assigns of that Party. The Recitals are incorporated by reference into this Agreement. The headings of this Agreement are for convenience of reference only and in no

way define, describe, extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement. The Parties have each consulted counsel of their choice regarding this Agreement, and, accordingly, no provisions of this Agreement will be construed against either Party on the basis that the Party drafted this Agreement or any provision thereof. The official text of this Agreement, any notice given or accounts or statements required by this Agreement, and any dispute proceeding related to or arising hereunder, will be in English. If any dispute concerning the construction or meaning of this Agreement arises, then reference will be made only to this Agreement as written in English and not to any translation into any other language.

23. **COUNTERPARTS**.

This Third Restated Agreement may be executed in one or more counterparts, each of which together shall constitute one and the same Agreement. For purposes of executing this Third Restated Agreement, a facsimile (including a PDF image delivered via email) copy of this Third Restated Agreement, including the signature pages, will be deemed an original. The Parties agree that neither Party will have any rights to challenge the use or authenticity of a counterpart of this Third Restated Agreement based solely on that its signature, or the signature of the other Party, on such counterpart is not an original signature.

IN WITNESS WHEREOF, the undersigned have entered into this Third Restated Agreement as of the date first set forth above.

Agreed and Accepted By:

Atara Biotherapeutics, Inc.:

By: /s/ [***]

Name: [***]

Title: Head of R&D

The Council of the Queensland Institute of Medical Research:

By: /s/ [***]

Name: [***]

Title: Chief Operating Officer 28 August 2020

SCHEDULE 1.15

FTE RATES*

[***]

SCHEDULE 2.2
DEVELOPMENT PLAN

[***]

SCHEDULE 4.2

BUDGET

[***]

EXHIBIT 10.3

ATARA BIOTHERAPEUTICS, INC.

AMENDED AND RESTATED 2018 INDUCEMENT PLAN

Adopted by the Board of Directors: September 22, 2020

1. General.

(a) Eligible Award Recipients. Awards under the Plan may only be granted to Employees who satisfy the standards for inducement grants under Rule 5635(c)(4) of the NASDAQ Listing Rules. A person who previously served as an Employee or Director shall not be eligible to receive Awards under the Plan, other than following a *bona fide* period of non-employment with the Company or an Affiliate.

(b) Available Awards. The Plan provides for the grant of the following Awards: (i) Nonstatutory Stock Options; (ii) Stock Appreciation Rights; (iii) Restricted Stock Awards; (iv) Restricted Stock Unit Awards; (v) Performance Stock Awards; (vi) Performance Cash Awards; and (viii) Other Stock Awards.

(c) Purpose. This Plan, through the granting of Awards, is intended to help the Company secure and retain the services of eligible award recipients, provide a material inducement for such individuals to enter into employment with the Company or an Affiliate within the meaning of Rule 5635(c)(4) of the NASDAQ Listing Rules, provide incentives for such persons to exert maximum efforts for the success of the Company and any Affiliate, and provide a means by which such individuals may benefit from increases in value of the Common Stock.

2. ADMINISTRATION.

(a) Administration by Board. The Board will administer the Plan. The Board may delegate administration of the Plan to a Committee or Committees, as provided in Section 2(c). Notwithstanding the foregoing or anything in the Plan to the contrary, the grant of Awards shall be approved by the Company's independent compensation committee or a majority of the Company's independent directors (as defined in Rule 5605(a)(2) of the NASDAQ Listing Rules) in order to comply with the exemption from the stockholder approval requirement for "inducement grants" provided under Rule 5635(c)(4) of the NASDAQ Listing Rules.

Powers of Board. The Board will have the power, subject to, and within the limitations of, the express provisions of the Plan:

(i)

(i) To determine: (A) who will be granted Awards; (B) when and how each Award will be granted; (C) what type of Award will be granted; (D) the provisions of each Award (which need not be identical), including when a person will be permitted to exercise or otherwise receive cash or Common Stock under the Award; (E) the number of shares of Common Stock subject to, or the cash value of, an Award; and (F) the Fair Market Value applicable to a Stock Award.

(ii) To construe and interpret the Plan and Awards granted under it, and to establish, amend and revoke rules and regulations for administration of the Plan and Awards. The Board, in the exercise of these powers, may correct any defect, omission or inconsistency in the Plan or in any Award Agreement or in the written terms of a Performance Cash Award, in a manner and to the extent it will deem necessary or expedient to make the Plan or Award fully effective.

(iii) To settle all controversies regarding the Plan and Awards granted under it.

(iv) To accelerate, in whole or in part, the time at which an Award may be exercised or vest (or at which cash or shares of Common Stock may be issued).

(v) To suspend or terminate the Plan at any time. Except as otherwise provided in the Plan or an Award Agreement, suspension or termination of the Plan will not materially impair a Participant's rights under his or her then-outstanding Award without his or her written consent except as provided in subsection (viii) below.

(vi) To amend the Plan in any respect the Board deems necessary or advisable, including, without limitation, adopting amendments relating to certain nonqualified deferred compensation under Section 409A of the Code and/or making the Plan or Awards granted under the Plan exempt from or compliant with the requirements for nonqualified deferred compensation under Section 409A of the Code, subject to the limitations, if any, of applicable law. If required by applicable law or listing requirements, and except as provided in Section 9(a) relating to Capitalization Adjustments, the Company will seek stockholder approval of any amendment of the Plan that (A) materially increases the number of shares of Common Stock available for issuance under the Plan, (B) materially expands the class of individuals eligible to receive Awards under the Plan, (C) materially increases the benefits accruing to Participants under the Plan, (D) materially reduces the price at which shares of Common Stock may be issued or purchased under the Plan, (E) materially extends the term of the Plan, or (F) materially expands the types of Awards available for issuance under the Plan, but only to the extent required by law or applicable listing standards. Except as otherwise provided in the Plan (including subsection (viii) below) or an Award Agreement, no amendment of the Plan will materially impair a Participant's rights under an outstanding Award without the Participant's written consent.

(vii) To submit any amendment to the Plan for stockholder approval, including, but not limited to, amendments to the Plan intended to satisfy the requirements of Rule 16b-3 of the Exchange Act.

(viii) To approve forms of Award Agreements for use under the Plan and to amend the terms of any one or more outstanding Awards, including, but not limited to, amendments to provide terms more favorable to the Participant than previously provided in the Award Agreement, subject to any specified limits in the Plan that are not subject to Board discretion. A Participant's rights under any Award will not be impaired by any such amendment unless the Company requests the consent of the affected Participant, and the Participant consents in writing. However, a Participant's rights will not be deemed to have been impaired by any such amendment if the Board, in its sole discretion, determines that the amendment, taken as a whole, does not materially impair the Participant's rights. In addition, subject to the limitations of applicable law, if any, the Board may amend the terms of any one or more Awards without the affected Participant's consent (A) to clarify the manner of exemption from, or to bring the Award into compliance with, Section 409A of the Code, or (B) to comply with other applicable laws or listing requirements.

(ix) Generally, to exercise such powers and to perform such acts as the Board deems necessary or expedient to promote the best interests of the Company and that are not in conflict with the provisions of the Plan and/or Award Agreements.

(x) To adopt such procedures and sub-plans as are necessary or appropriate (A) to permit or facilitate participation in the Plan by Employees who are foreign nationals or employed outside the United States or (B) allow Awards to qualify for special tax treatment in a foreign jurisdiction; provided that Board approval will not be necessary for immaterial modifications to the Plan or any Award Agreement that are required for compliance with the laws of the relevant foreign jurisdiction.

(xi) To effect, with the consent of any adversely affected Participant, (A) the reduction of the exercise, purchase or strike price of any outstanding Stock Award; (B) the cancellation of any outstanding Stock Award and the grant in substitution therefore of a new (1) Option or SAR, (2) Restricted Stock Award, (3) Restricted Stock Unit Award, (4) Other Stock Award, (5) cash award and/or (6) award of other valuable consideration determined by the Board, in its sole discretion, with any such substituted award (x) covering the same or a different number of shares of Common Stock as the cancelled Stock Award and (y) granted under the Plan or another equity or compensatory plan of the Company; or (C) any other action that is treated as a repricing under generally accepted accounting principles.

(c) Delegation to Committee.

(i) General. The Board may delegate some or all of the administration of the Plan to a Committee or Committees, provided, that the grant of Awards will be approved by the Company's independent compensation committee or a majority of the Company's independent directors (as defined in Rule 5605(a)(2) of the NASDAQ Listing Rules) in order to comply with the exemption from the stockholder approval requirement for "inducement grants" provided under Rule 5635(c)(4) of the NASDAQ Listing Rules. If administration of the Plan is delegated to a Committee, the Committee will have, in connection with the administration of the Plan, the powers theretofore possessed by the Board that have been delegated to the Committee, including the power to delegate to a subcommittee of the Committee any of the administrative powers the Committee is authorized to exercise (and references in this Plan to the Board will thereafter be to the Committee or subcommittee). Any delegation of administrative powers will be reflected in resolutions, not inconsistent with the provisions of the Plan, adopted from time to time by the Board or Committee (as applicable). The Committee may, at any time, abolish the subcommittee and/or revest in the Committee any powers delegated to the subcommittee. The Board may retain the authority to concurrently administer the Plan with the Committee and may, at any time, revest in the Board some or all of the powers previously delegated.

(ii) Rule 16b-3 Compliance. The Committee may consist solely of two or more Non-Employee Directors, in accordance with Rule 16b-3 of the Exchange Act.

(d) Effect of Board's Decision. All determinations, interpretations and constructions made by the Board in good faith will not be subject to review by any person and will be final, binding and conclusive on all persons.

3. Shares Subject to the Plan

(a) Share Reserve. Subject to Section 9(a) relating to Capitalization Adjustments, the aggregate number of shares of Common Stock that may be issued pursuant to Stock Awards from and after the Effective Date will not exceed 2,750,000 (the "***Share Reserve***"). For clarity, the Share Reserve is a limitation on the number of shares of Common Stock that may be issued under to the Plan. As a single share may be subject to grant more than once (*e.g.*, if a share subject to a Stock Award is forfeited, it may be made subject to grant again as provided in Section 3(b) below), the Share Reserve is not a limit on the number of Stock Awards that can be granted. Shares may be issued under the terms of this Plan in connection with a merger or acquisition as permitted by NASDAQ Listing Rule 5635(c), NYSE Listed Company Manual Section 303A.08, AMEX Company Guide Section 711 or other applicable rule, and such issuance will not reduce the number of shares available for issuance under the Plan.

(b) Reversion of Shares to the Share Reserve. If a Stock Award or any portion of a Stock Award (i) expires or otherwise terminates without all of the shares covered by the Stock Award having been issued or (ii) is settled in cash (i.e., the Participant receives cash rather than stock), such expiration, termination or settlement will not reduce (or otherwise offset) the number of shares of Common Stock that are available for issuance under the Plan. If any shares of Common Stock issued under a Stock Award are forfeited back to or repurchased by the Company because of the failure to meet a contingency or condition required to vest such shares in the Participant, then the shares that are forfeited or repurchased will revert to and again become available for issuance under the Plan. Any shares reacquired by the Company in satisfaction of tax withholding obligations on a Stock Award or as consideration for the exercise or purchase price of a Stock Award will again become available for issuance under the Plan.

(c) Source of Shares. The stock issuable under the Plan will be shares of authorized but unissued or reacquired Common Stock, including shares repurchased by the Company on the open market or otherwise.

4. Eligibility.

(a) Eligibility. Awards may only be granted to persons who are Employees as described in Section 1(a), where the Award is an inducement material to the individual's entering into employment with the Company or an Affiliate within the meaning of Rule 5635(c)(4) of the NASDAQ Listing Rules. For clarity, Awards may not be granted to (1) Consultants or Directors, for service in such capacities, or (2) any individual who was previously an Employee or Director of the Company, other than following a bona fide period of non-employment with the Company or an Affiliate.

(b) Approval Requirements. All Awards must be granted either by a majority of the Company's independent directors or by the Company's compensation committee comprised of independent directors within the meaning of Rule 5605(a)(2) of the NASDAQ Listing Rules.

5. Provisions Relating to Options and Stock Appreciation Rights.

Each Option or SAR will be in such form and will contain such terms and conditions as the Board deems appropriate. All Options will be Nonstatutory Stock Options. The provisions of separate Options or SARs need not be identical; provided, however, that each Award Agreement will conform to (through incorporation of provisions hereof by reference in the applicable Award Agreement or otherwise) the substance of each of the following provisions:

(a) Term. No Option or SAR will be exercisable after the expiration of 10 years from the date of its grant or such shorter period specified in the Award Agreement.

(b) Exercise Price. The exercise or strike price of each Option or SAR will be not less than 100% of the Fair Market Value of the Common Stock subject to the Option or SAR on the date the Award is granted. Notwithstanding the foregoing, an Option or SAR may be granted with an exercise or strike price lower than 100% of the Fair Market Value of the Common Stock subject to the Award if such Award is granted pursuant to an assumption of or substitution for another option or stock appreciation right pursuant to a Corporate Transaction, as permitted by NASDAQ Listing Rule 5635(c), NYSE Listed Company Manual Section 303A.08, AMEX Company Guide Section 711 or other applicable rule, and in a manner consistent with the provisions of Section 409A of the Code and, if applicable, Section 424(a) of the Code. Each SAR will be denominated in shares of Common Stock equivalents.

(c) Purchase Price for Options. The purchase price of Common Stock acquired pursuant to the exercise of an Option may be paid, to the extent permitted by applicable law and as determined by the Board in its sole discretion, by any combination of the methods of payment set forth below. The Board will have the authority to grant Options that do not permit all of the following methods of payment (or otherwise restrict the ability to use certain methods) and to grant Options that require the consent of the Company to use a particular method of payment. The permitted methods of payment are as follows:

(i) by cash, check, bank draft or money order payable to the Company;

(ii) pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board that, prior to the issuance of the stock subject to the Option, results in either the receipt of cash (or check) by the Company or the receipt of irrevocable instructions to pay the aggregate exercise price to the Company from the sales proceeds;

(iii) by delivery to the Company (either by actual delivery or attestation) of shares of Common Stock;

(iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Common Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; provided, however, that the Company will accept cash or other payment from the Participant to the extent of any remaining balance of the aggregate exercise price not satisfied by such reduction in the number of whole shares to be issued. Shares of Common Stock will no longer be subject to an Option and will not be exercisable thereafter to the extent that (A) shares issuable upon exercise are used to pay the exercise price pursuant to the "net exercise," (B) shares are delivered to the Participant as a result of such exercise, and (C) shares are withheld to satisfy tax withholding obligations; or

(v) in any other form of legal consideration that may be acceptable to the Board and specified in the applicable Award Agreement.

(d) Exercise and Payment of a SAR. To exercise any outstanding SAR, the Participant must provide written notice of exercise to the Company in compliance with the provisions of the Stock Appreciation Right Agreement evidencing such SAR. The appreciation distribution payable on the exercise of a SAR will be not greater than an amount equal to the excess of (A) the aggregate Fair Market Value (on the date of the exercise of the SAR) of a number of shares of Common Stock equal to the number of Common Stock equivalents in which the Participant is vested under such SAR (with respect to which the Participant is exercising the SAR on such date), over (B) the aggregate strike price of the number of Common Stock equivalents with respect to which the Participant is exercising the SAR on such date. The appreciation distribution may be paid in Common Stock, in cash, in any combination of the two or in any other form of consideration, as determined by the Board and contained in the Award Agreement evidencing such SAR.

(e) Transferability of Options and SARs. The Board may, in its sole discretion, impose such limitations on the transferability of Options and SARs as the Board will determine. In the absence of such a determination by the Board to the contrary, the following restrictions on the transferability of Options and SARs will apply:

(i) Restrictions on Transfer. An Option or SAR will not be transferable except by will or by the laws of descent and distribution (or pursuant to subsections (ii) and (iii) below), and will be exercisable during the lifetime of the Participant only by the Participant. The Board may permit transfer of the Option or SAR in a manner that is not prohibited by applicable tax and securities laws. Except as explicitly provided herein, neither an Option nor a SAR may be transferred for consideration.

(ii) Domestic Relations Orders. Subject to the approval of the Board or a duly authorized Officer, an Option or SAR may be transferred pursuant to the terms of a domestic relations order, official marital settlement agreement or other divorce or separation instrument as permitted by U.S. Treasury Regulation 1.421-1(b)(2).

(iii) Beneficiary Designation. Subject to the approval of the Board or a duly authorized Officer, a Participant may, by delivering written notice to the Company, in a form approved by the Company (or the designated broker), designate a third party who, on the death of the Participant, will thereafter be entitled to exercise the Option or SAR and receive the Common Stock or other consideration resulting from such exercise. In the absence of such a designation, the executor or administrator of the Participant's estate will be entitled to exercise the Option or SAR and receive the Common Stock or other consideration resulting from such exercise. However, the Company may prohibit designation of a beneficiary at any time, including due to any conclusion by the Company that such designation would be inconsistent with the provisions of applicable laws.

(f) Vesting Generally. The total number of shares of Common Stock subject to an Option or SAR may vest and therefore become exercisable in periodic installments that may or may not be equal. The Option or SAR may be subject to such other terms and conditions on the time or times when it may or may not be exercised (which may be based on the satisfaction of Performance Goals or other criteria) as the Board may deem appropriate. The vesting provisions of individual Options or SARs may vary. The provisions of this Section 5(f) are subject to any Option or SAR provisions governing the minimum number of shares of Common Stock as to which an Option or SAR may be exercised.

(g) Termination of Continuous Service. Except as otherwise provided in the applicable Award Agreement, or other agreement between the Participant and the Company, if a Participant's Continuous Service terminates (other than for Cause and other than upon the Participant's death or Disability), the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Award as of the date of termination of Continuous Service) within the period of time ending on the earlier of (i) the date three (3) months following the termination of the Participant's Continuous Service and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Agreement. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR within the applicable time frame, the Option or SAR will terminate.

(h) Extension of Termination Date. Except as otherwise provided in the applicable Award Agreement, if the exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause and other than upon the Participant's death or Disability) would be prohibited at any time solely because the issuance of shares of Common Stock would violate the registration requirements under the Securities Act, then the Option or SAR will terminate on the earlier of (i) the expiration of a total period of three (3) months (that need not be consecutive) after the termination of the Participant's Continuous Service during which the exercise of the Option or SAR would not be in violation of such registration requirements, and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Agreement. In addition, unless otherwise provided in a Participant's applicable Award Agreement, if the sale of any Common Stock received upon exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause) would violate the Company's insider trading policy, then the Option or SAR will terminate on the earlier of (i) the expiration of a period of months (that need not be consecutive) equal to the applicable post-termination exercise period after the termination of the Participant's Continuous Service during which the sale of the Common Stock received upon exercise of the Option or SAR would not be in violation of the Company's insider trading policy, or (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Agreement.

(i) Disability of Participant. Except as otherwise provided in the applicable Award Agreement, or other agreement between the Participant and the Company, if a Participant's Continuous Service terminates as a result of the Participant's Disability, the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Option or SAR as of the date of termination of Continuous Service), but only within such period of time ending on the earlier of (i) the date 12 months following such termination of Continuous Service, and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Agreement. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR within the applicable time frame, the Option or SAR (as applicable) will terminate.

(j) Death of Participant. Except as otherwise provided in the applicable Award Agreement, or other agreement between the Participant and the Company, if (i) a Participant's Continuous Service terminates as a result of the Participant's death, or (ii) the Participant dies within the period (if any) specified in the applicable Award Agreement for exercisability after the termination of the Participant's Continuous Service (for a reason other than death), then the Option or SAR may be exercised (to the extent the Participant was entitled to exercise such Option or SAR as of the date of death) by the Participant's estate, by a person who acquired the right to exercise the Option or SAR by bequest or inheritance or by a person designated to exercise the Option or SAR upon the Participant's death, but only within the period ending on the earlier of (i) the date 18 months following the date of death, and (ii) the expiration of the term of such Option or SAR as set forth in the applicable Award Agreement. If, after the Participant's death, the Option or SAR is not exercised within the applicable time frame, the Option or SAR will terminate.

(k) Termination for Cause. Except as explicitly provided otherwise in a Participant's Award Agreement or other individual written agreement between the Company or any Affiliate and the Participant, if a Participant's Continuous Service is terminated for Cause, the Option or SAR will terminate upon the date on which the event giving rise to the termination for Cause first occurred, and the Participant will be prohibited from exercising his or her Option or SAR from and after the date on which the event giving rise to the termination for Cause first occurred (or, if required by law, the date of termination of Continuous Service). If a Participant's Continuous Service is suspended pending an investigation of the existence of Cause, all of the Participant's rights under the Option or SAR will also be suspended during the investigation period.

(l) Non-Exempt Employees. If an Option or SAR is granted to an Employee who is a non-exempt employee for purposes of the U.S. Fair Labor Standards Act of 1938, as amended, the Option or SAR will not be first exercisable for any shares of Common Stock until at least 6 months following the date of grant of the Option or SAR (although the Award may vest prior to such date). Consistent with the provisions of the U.S. Worker Economic Opportunity Act, (i) if such non-exempt Employee dies or suffers a Disability, (ii) upon a Corporate Transaction in which such Option or SAR is not assumed, continued, or substituted, (iii) upon a Change in Control, or (iv) upon the non-exempt Employee's retirement (as such term may be defined in the non-exempt Employee's applicable Award Agreement, in another agreement between the non-exempt Employee and the Company, or, if no such definition, in accordance with the Company's then current employment policies and guidelines), the vested portion of any Options and SARs may be exercised earlier than 6 months following the date of grant. The foregoing provision is intended to operate so that any income derived by a non-exempt Employee in connection with the exercise or vesting of an Option or SAR will be exempt from his or her regular rate of pay. To the extent permitted and/or required for compliance with the U.S. Worker Economic Opportunity Act to ensure that any income derived by a non-exempt Employee in connection with the exercise, vesting or issuance of any shares under any other Stock Award will be exempt from such employee's regular rate of pay, the provisions of this paragraph will apply to all Stock Awards and are hereby incorporated by reference into such Stock Award Agreements.

6. Provisions of Stock Awards Other than Options and SARS.

(a) Restricted Stock Awards. Each Restricted Stock Award Agreement will be in such form and will contain such terms and conditions as the Board deems appropriate. To the extent consistent with the Company's bylaws, at the Board's election, shares of Common Stock may be (x) held in book entry form subject to the Company's instructions until any restrictions relating to the Restricted Stock Award lapse, or (y) evidenced by a certificate, which certificate will be held in such form and manner as determined by the Board. The terms and conditions of Restricted Stock Award Agreements may change from time to time, and the terms and conditions of separate Restricted Stock Award Agreements need not be identical. Each Restricted Stock Award Agreement will conform to (through incorporation of the provisions hereof by reference in the agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. A Restricted Stock Award may be awarded in consideration for (A) cash, check, bank draft or money order payable to the Company, (B) past services to the Company or an Affiliate, or (C) any other form of legal consideration (including future services) that may be acceptable to the Board, in its sole discretion, and permissible under applicable law.

(ii) Vesting. Shares of Common Stock awarded under the Restricted Stock Award Agreement may be subject to forfeiture to the Company in accordance with a vesting schedule to be determined by the Board.

(iii) Termination of Participant's Continuous Service. If a Participant's Continuous Service terminates, the Company may receive through a forfeiture condition or a repurchase right, any or all of the shares of Common Stock held by the Participant that have not vested as of the date of termination of Continuous Service under the terms of the Restricted Stock Award Agreement.

(iv) Transferability. Rights to acquire shares of Common Stock under the Restricted Stock Award Agreement will be transferable by the Participant only upon such terms and conditions as are set forth in the Restricted Stock Award Agreement, as the Board will determine in its sole discretion, so long as Common Stock awarded under the Restricted Stock Award Agreement remains subject to the terms of the Restricted Stock Award Agreement.

(v) Dividends. A Restricted Stock Award Agreement may provide that any dividends paid on Restricted Stock will be subject to the same vesting and forfeiture restrictions as apply to the shares subject to the Restricted Stock Award to which they relate.

(b) Restricted Stock Unit Awards. Each Restricted Stock Unit Award Agreement will be in such form and will contain such terms and conditions as the Board deems appropriate. The terms and conditions of Restricted Stock Unit Award Agreements may change from time to time, and the terms and conditions of separate Restricted Stock Unit Award Agreements need not be identical. Each Restricted Stock Unit Award Agreement will conform to (through incorporation of the provisions hereof by reference in the Agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. At the time of grant of a Restricted Stock Unit Award, the Board will determine the consideration, if any, to be paid by the Participant upon delivery of each share of Common Stock subject to the Restricted Stock Unit Award. The consideration to be paid (if any) by the Participant for each share of Common Stock subject to a Restricted Stock Unit Award may be paid in any form of legal consideration that may be acceptable to the Board, in its sole discretion, and permissible under applicable law.

(ii) Vesting. At the time of the grant of a Restricted Stock Unit Award, the Board may impose such restrictions on or conditions to the vesting of the Restricted Stock Unit Award as it, in its sole discretion, deems appropriate.

(iii) Payment. A Restricted Stock Unit Award may be settled by the delivery of shares of Common Stock, their cash equivalent, any combination thereof or in any other form of consideration, as determined by the Board and contained in the Restricted Stock Unit Award Agreement.

(iv) Additional Restrictions. At the time of the grant of a Restricted Stock Unit Award, the Board, as it deems appropriate, may impose such restrictions or conditions that delay the delivery of the shares of Common Stock (or their cash equivalent) subject to a Restricted Stock Unit Award to a time after the vesting of such Restricted Stock Unit Award.

(v) Dividend Equivalents. Dividend equivalents may be credited in respect of shares of Common Stock covered by a Restricted Stock Unit Award, as determined by the Board and contained in the Restricted Stock Unit Award Agreement. At the sole discretion of the Board, such dividend equivalents may be converted into additional shares of Common Stock covered by the Restricted Stock Unit Award in such manner as determined by the Board. Any additional shares covered by the Restricted Stock Unit Award credited by reason of such dividend equivalents will be subject to all of the same terms and conditions of the underlying Restricted Stock Unit Award Agreement to which they relate.

(vi) Termination of Participant's Continuous Service. Except as otherwise provided in the applicable Restricted Stock Unit Award Agreement, such portion of the Restricted Stock Unit Award that has not vested will be forfeited upon the Participant's termination of Continuous Service.

(c) Performance Awards.

(i) Performance Stock Awards. A Performance Stock Award is a Stock Award that is payable (including that may be granted, vest or exercised) contingent upon the attainment during a Performance Period of certain Performance Goals. A Performance Stock Award may, but need not, require the completion of a specified period of Continuous Service. The length of any Performance Period, the Performance Goals to be achieved during the Performance Period, and the measure of whether and to what degree such Performance Goals have been attained will be conclusively determined by the Committee or the Board, in its sole discretion. In addition, to the extent permitted by applicable law and the applicable Award Agreement, the Board may determine that cash may be used in payment of Performance Stock Awards.

(ii) Performance Cash Awards. A Performance Cash Award is a cash award that is payable contingent upon the attainment during a Performance Period of certain Performance Goals. A Performance Cash Award may also require the completion of a specified period of Continuous Service. At the time of grant of a Performance Cash Award, the length of any Performance Period, the Performance Goals to be achieved during the Performance Period, and the measure of whether and to what degree such Performance Goals have been attained will be conclusively determined by the Committee or the Board, in its sole discretion. The Board may specify the form of payment of Performance Cash Awards, which may be cash or other property, or may provide for a Participant to have the option for his or her Performance Cash Award, or such portion thereof as the Board may specify, to be paid in whole or in part in cash or other property.

(iii) Board Discretion. The Board retains the discretion to reduce or eliminate the compensation or economic benefit due upon attainment of Performance Goals and to define the manner of calculating the Performance Criteria it selects to use for a Performance Period.

(d) Other Stock Awards. Other forms of Stock Awards valued in whole or in part by reference to, or otherwise based on, Common Stock, including the appreciation in value thereof (*e.g.*, options or stock rights with an exercise price or strike price less than 100% of the Fair Market Value of the Common Stock at the time of grant) may be granted either alone or in addition to Stock Awards provided for under Section 5 and the preceding provisions of this Section 6. Subject to the provisions of the Plan, the Board will have sole and complete authority to determine the persons to whom and the time or times at which such Other Stock Awards will be granted, the number of shares of Common Stock (or the cash equivalent thereof) to be granted pursuant to such Other Stock Awards and all other terms and conditions of such Other Stock Awards.

7. Covenants of the Company.

(a) Availability of Shares. The Company will keep available at all times the number of shares of Common Stock reasonably required to satisfy then-outstanding Stock Awards.

(b) Securities Law Compliance. The Company will seek to obtain from each regulatory commission or agency having jurisdiction over the Plan such authority as may be required to grant Stock Awards and to issue and sell shares of Common Stock upon exercise of the Stock Awards; provided, however, that this undertaking will not require the Company to register under the Securities Act the Plan, any Stock Award or any Common Stock issued or issuable pursuant to any such Stock Award. If, after reasonable efforts and at a reasonable cost, the Company is unable to obtain from any such regulatory commission or agency the authority that counsel for the Company deems necessary for the lawful issuance and sale of Common Stock under the Plan, the Company will be relieved from any liability for failure to issue and sell Common Stock upon exercise of such Stock Awards unless and until such authority is obtained. A Participant will not be eligible for the grant of an Award or the subsequent issuance of cash or Common Stock pursuant to the Award if such grant or issuance would be in violation of any applicable securities law.

(c) No Obligation to Notify or Minimize Taxes. The Company will have no duty or obligation to any Participant to advise such holder as to the time or manner of exercising such Stock Award. Furthermore, the Company will have no duty or obligation to warn or otherwise advise such holder of a pending termination or expiration of an Award or a possible period in which the Award may not be exercised. The Company has no duty or obligation to minimize the tax consequences of an Award to the holder of such Award.

8. Miscellaneous.

(a) Use of Proceeds from Sales of Common Stock. Proceeds from the sale of shares of Common Stock pursuant to Stock Awards will constitute general funds of the Company.

(b) Corporate Action Constituting Grant of Awards. Corporate action constituting a grant by the Company of an Award to any Participant will be deemed completed as of the date of such corporate action, unless otherwise determined by the Board, regardless of when the instrument, certificate, or letter evidencing the Award is communicated to, or actually received or accepted by, the Participant. In the event that the corporate records (*e.g.*, Board consents, resolutions or minutes) documenting the corporate action constituting the grant contain terms (*e.g.*, exercise price, vesting schedule or number of shares) that are inconsistent with those in the Award Agreement as a result of a clerical error in the papering of the Award Agreement, the corporate records will control and the Participant will have no legally binding right to the incorrect term in the Award Agreement.

(c) Stockholder Rights. No Participant will be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Common Stock subject to a Stock Award unless and until (i) such Participant has satisfied all requirements for exercise of, or the issuance of shares of Common Stock under, the Stock Award pursuant to its terms, and (ii) the issuance of the Common Stock subject to such Stock Award has been entered into the books and records of the Company.

(d) No Employment or Other Service Rights. Nothing in the Plan, any Award Agreement or any other instrument executed thereunder or in connection with any Award granted pursuant thereto will confer upon any Participant any right to continue to serve the Company or an Affiliate in the capacity in effect at the time the Award was granted or will affect the right of the Company or an Affiliate to terminate (i) the employment of an Employee with or without notice and with or without cause, including, but not limited to, Cause, (ii) the service of a Consultant pursuant to the terms of such Consultant's agreement with the Company or an Affiliate, or (iii) the service of a Director pursuant to the bylaws of the Company or an Affiliate, and any applicable provisions of the corporate law of the state in which the Company or the Affiliate is incorporated, as the case may be.

(e) Change in Time Commitment. In the event a Participant's regular level of time commitment in the performance of his or her services for the Company and any Affiliates is reduced (for example, and without limitation, if the Participant is an Employee of the Company and the Employee has a change in status from a full-time Employee to a part-time Employee or takes an extended leave of absence) after the date of grant of any Award to the Participant, the Board has the right in its sole discretion to (i) make a corresponding reduction in the number of

shares or cash amount subject to any portion of such Award that is scheduled to vest or become payable after the date of such change in time commitment, and (ii) in lieu of or in combination with such a reduction, extend the vesting or payment schedule applicable to such Award. In the event of any such reduction, the Participant will have no right with respect to any portion of the Award that is so reduced or extended.

(f) Investment Assurances. The Company may require a Participant, as a condition of exercising or acquiring Common Stock under any Stock Award, (i) to give written assurances satisfactory to the Company as to the Participant's knowledge and experience in financial and business matters and/or to employ a purchaser representative reasonably satisfactory to the Company who is knowledgeable and experienced in financial and business matters and that he or she is capable of evaluating, alone or together with the purchaser representative, the merits and risks of exercising the Stock Award, and (ii) to give written assurances satisfactory to the Company stating that the Participant is acquiring Common Stock subject to the Stock Award for the Participant's own account and not with any present intention of selling or otherwise distributing the Common Stock. The foregoing requirements, and any assurances given pursuant to such requirements, will be inoperative if (i) the issuance of the shares upon the exercise of a Stock Award or acquisition of Common Stock under the Stock Award has been registered under a then currently effective registration statement under the Securities Act, or (ii) as to any particular requirement, a determination is made by counsel for the Company that such requirement need not be met in the circumstances under the then applicable securities laws. The Company may, upon advice of counsel to the Company, place legends on stock certificates issued under the Plan as such counsel deems necessary or appropriate in order to comply with applicable securities laws, including, but not limited to, legends restricting the transfer of the Common Stock.

(g) Withholding Obligations. Unless prohibited by the terms of an Award Agreement, the Company may, in its sole discretion, satisfy any U.S. federal, state, local, foreign or other tax withholding obligation relating to an Award by any of the following means or by a combination of such means: (i) causing the Participant to tender a cash payment; (ii) withholding shares of Common Stock from the shares of Common Stock issued or otherwise issuable to the Participant in connection with the Award; provided, however, that no shares of Common Stock are withheld with a value exceeding the minimum amount of tax required to be withheld by law (or such other amount as may be necessary to avoid classification of the Stock Award as a liability for financial accounting purposes); (iii) withholding cash from an Award settled in cash; (iv) withholding payment from any amounts otherwise payable to the Participant, including proceeds from the sale of shares of Common Stock issued pursuant to a Stock Award; or (v) by such other method as may be set forth in the Award Agreement.

(h) Electronic Delivery. Any reference herein to a "written" agreement or document will include any agreement or document delivered electronically, filed publicly at www.sec.gov (or any successor website thereto), or posted on the Company's intranet (or other shared electronic medium controlled by the Company to which the Participant has access).

(i) Deferrals. To the extent permitted by applicable law, the Board, in its sole discretion, may determine that the delivery of Common Stock or the payment of cash, upon the exercise, vesting or settlement of all or a portion of any Award may be deferred and may establish programs and procedures for deferral elections to be made by Participants. Deferrals by

Participants will be made in accordance with Section 409A of the Code (to the extent applicable to a Participant). Consistent with Section 409A of the Code, the Board may provide for distributions while a Participant is still an employee or otherwise providing services to the Company. The Board is authorized to make deferrals of Awards and determine when, and in what annual percentages, Participants may receive payments, including lump sum payments, following the Participant's termination of Continuous Service, and implement such other terms and conditions consistent with the provisions of the Plan and in accordance with applicable law.

(j) Compliance with Section 409A. Unless otherwise expressly provided for in an Award Agreement, the Plan and Award Agreements will be interpreted to the greatest extent possible in a manner that makes the Plan and the Awards granted hereunder exempt from Section 409A of the Code, and, to the extent not so exempt, in compliance with Section 409A of the Code. If the Board determines that any Award granted hereunder is not exempt from and is therefore subject to Section 409A of the Code, the Award Agreement evidencing such Award will incorporate the terms and conditions necessary to avoid the consequences specified in Section 409A(a)(1) of the Code, and to the extent an Award Agreement is silent on terms necessary for compliance, such terms are hereby incorporated by reference into the Award Agreement. Notwithstanding anything to the contrary in this Plan (and unless the Award Agreement specifically provides otherwise), if the shares of Common Stock are publicly traded, and if a Participant holding an Award that constitutes "deferred compensation" under Section 409A of the Code is a "specified employee" for purposes of Section 409A of the Code, no distribution or payment of any amount that is due because of a "separation from service" (as defined in Section 409A of the Code without regard to alternative definitions thereunder) will be issued or paid before the date that is six (6) months following the date of such Participant's "separation from service" or, if earlier, the date of the Participant's death, unless such distribution or payment can be made in a manner that complies with Section 409A of the Code, and any amounts so deferred will be paid in a lump sum on the day after such six (6) month period elapses, with the balance paid thereafter on the original schedule.

(k) Clawback/Recovery. All Awards granted under the Plan will be subject to recoupment in accordance with any clawback policy that the Company is required to adopt pursuant to the listing standards of any national securities exchange or association on which the Company's securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable law. In addition, the Board may impose such other clawback, recovery or recoupment provisions in an Award Agreement as the Board determines necessary or appropriate, including, but not limited to, a reacquisition right in respect of previously acquired shares of Common Stock or other cash or property upon the occurrence of Cause. No recovery of compensation under such a clawback policy will be an event giving rise to a right to resign for "good reason" or "constructive termination" (or similar term) under any agreement with the Company or an Affiliate.

9. Adjustments upon Changes in Common Stock; Other Corporate Events.

(a) Capitalization Adjustments. In the event of a Capitalization Adjustment, the Board will appropriately and proportionately adjust: (i) the class(es) and maximum number of securities subject to the Plan pursuant to Section 3(a), and (ii) the class(es) and number of securities and price per share of stock subject to outstanding Stock Awards. The Board will make such adjustments, and its determination will be final, binding and conclusive.

(b) Dissolution or Liquidation. Except as otherwise provided in the Stock Award Agreement, in the event of a dissolution or liquidation of the Company, all outstanding Stock Awards (other than Stock Awards consisting of vested and outstanding shares of Common Stock not subject to a forfeiture condition or the Company's right of repurchase) will terminate immediately prior to the completion of such dissolution or liquidation, and the shares of Common Stock subject to the Company's repurchase rights or subject to a forfeiture condition may be repurchased or reacquired by the Company notwithstanding the fact that the holder of such Stock Award is providing Continuous Service; provided, however, that the Board may, in its sole discretion, cause some or all Stock Awards to become fully vested, exercisable and/or no longer subject to repurchase or forfeiture (to the extent such Stock Awards have not previously expired or terminated) before the dissolution or liquidation is completed but contingent on its completion.

(c) Corporate Transaction. The following provisions will apply to Stock Awards in the event of a Corporate Transaction unless otherwise provided in the instrument evidencing the Stock Award or any other written agreement between the Company or any Affiliate and the Participant or unless otherwise expressly provided by the Board at the time of grant of a Stock Award. In the event of a Corporate Transaction, then, notwithstanding any other provision of the Plan, the Board will take one or more of the following actions with respect to Stock Awards, contingent upon the closing or completion of the Corporate Transaction:

(i) arrange for the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company) to assume or continue the Stock Award or to substitute a similar stock award for the Stock Award (including, but not limited to, an award to acquire the same consideration paid to the stockholders of the Company pursuant to the Corporate Transaction);

(ii) arrange for the assignment of any reacquisition or repurchase rights held by the Company in respect of Common Stock issued pursuant to the Stock Award to the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company);

(iii) accelerate the vesting, in whole or in part, of the Stock Award (and, if applicable, the time at which the Stock Award may be exercised) to a date prior to the effective time of such Corporate Transaction as the Board will determine (or, if the Board will not determine such a date, to the date that is 5 days prior to the effective date of the Corporate Transaction), with such Stock Award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction;

(iv) arrange for the lapse, in whole or in part, of any reacquisition or repurchase rights held by the Company with respect to the Stock Award;

(v) cancel or arrange for the cancellation of the Stock Award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for such cash consideration, if any, as the Board, in its sole discretion, may consider appropriate; and

(vi) cancel or arrange for the cancellation of the Stock Award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for a payment, in such form as may be determined by the Board equal to the excess, if any, of (A) the value of the property the Participant would have received upon the exercise of the Stock Award immediately prior to the effective time of the Corporate Transaction, over (B) any exercise price payable by such holder in connection with such exercise.

The Board need not take the same action or actions with respect to all Stock Awards or portions thereof or with respect to all Participants. The Board may take different actions with respect to the vested and unvested portions of a Stock Award.

In the absence of any affirmative determination by the Board at the time of a Corporate Transaction, each outstanding Stock Award will be assumed or an equivalent Stock Award will be substituted by such successor corporation or a parent or subsidiary of such successor corporation (the "***Successor Corporation***"), unless the Successor Corporation does not agree to assume the Stock Award or to substitute an equivalent Stock Award, in which case such Stock Award will terminate upon the consumption of the transaction.

(d) Change in Control. A Stock Award may be subject to additional acceleration of vesting and exercisability upon or after a Change in Control as may be provided in the Stock Award Agreement for such Stock Award or as may be provided in any other written agreement between the Company or any Affiliate and the Participant, but in the absence of such provision, no such acceleration will occur.

10. Termination or Suspension of the Plan.

The Board may suspend or terminate the Plan at any time. No Awards may be granted under the Plan while the Plan is suspended or after it is terminated.

11. Effective Date of Plan.

The Plan will become effective on the Effective Date.

12. Choice of Law.

The laws of the State of Delaware will govern all questions concerning the construction, validity and interpretation of this Plan, without regard to that state's conflict of laws rules.

13. Definitions.

As used in the Plan, the following definitions will apply to the capitalized terms indicated below:

(a) "***Affiliate***" means, at the time of determination, any "parent" or "subsidiary" of the Company, as such terms are defined in Rule 405 of the Securities Act. The Board will have the authority to determine the time or times at which "parent" or "subsidiary" status is determined within the foregoing definition.

(b) "***Award***" means a Stock Award or a Performance Cash Award.

(c) "***Award Agreement***" means a written agreement between the Company and a Participant evidencing the terms and conditions of an Award.

(d) "***Board***" means the Board of Directors of the Company.

(e) "***Capitalization Adjustment***" means any change that is made in, or other events that occur with respect to, the Common Stock subject to the Plan or subject to any Stock Award after the Adoption Date without the receipt of consideration by the Company through merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, dividend in property other than cash, large nonrecurring cash dividend, stock split, liquidating dividend, combination of shares, exchange of shares, change in corporate structure or other similar equity restructuring transaction, as that term is used in Financial Accounting Standards Board Accounting Standards Codification Topic 718 (or any successor thereto). Notwithstanding the foregoing, the conversion of any convertible securities of the Company will not be treated as a Capitalization Adjustment.

(f) "***Cause***" will have the meaning ascribed to such term in any written agreement between the Participant and the Company or any Affiliate defining such term and, in the absence of such agreement, such term means, with respect to a Participant, the occurrence of any of the following events: (i) Participant's willful failure substantially to perform his or her duties and responsibilities to the Company or any Affiliate or deliberate violation of a policy of the Company or any Affiliate; (ii) Participant's commission of any act of fraud, embezzlement, dishonesty or any other willful misconduct that has caused or is reasonably expected to result in material injury to the Company or any Affiliate; (iii) unauthorized use or disclosure by Participant of any proprietary information or trade secrets of the Company or any other party to whom the Participant owes an obligation of nondisclosure as a result of his or her relationship with the Company or any Affiliate; or (iv) Participant's willful breach of any of his or her obligations under any written agreement or covenant with the Company or any Affiliate. The determination as to whether a Participant is being terminated for Cause will be made in good faith by the Company and will be final and binding on the Participant. Any determination by the Company that the Continuous Service of a Participant was terminated with or without Cause for the purposes of outstanding Awards held by such Participant will have no effect upon any determination of the rights or obligations of the Company, any Affiliate or such Participant for any other purpose.

(g) "***Change in Control***" means the occurrence, in a single transaction or in a series of related transactions, of any one or more of the following events:

(i) any Exchange Act Person becomes the Owner, directly or indirectly, of securities of the Company representing more than 50% of the combined voting power of the Company's then outstanding securities other than by virtue of a merger, consolidation or similar transaction. Notwithstanding the foregoing, a Change in Control will not be deemed to occur (A) on account of the acquisition of securities of the Company directly from the Company, (B) on account of the acquisition of securities of the Company by an investor, any affiliate thereof or any other Exchange Act Person that acquires the Company's securities in a transaction or series of related transactions the primary purpose of which is to obtain financing for the Company through

the issuance of equity securities or (C) solely because the level of Ownership held by any Exchange Act Person (the "Subject Person") exceeds the designated percentage threshold of the outstanding voting securities as a result of a repurchase or other acquisition of voting securities by the Company reducing the number of shares outstanding, provided that if a Change in Control would occur (but for the operation of this sentence) as a result of the acquisition of voting securities by the Company, and after such share acquisition, the Subject Person becomes the Owner of any additional voting securities that, assuming the repurchase or other acquisition had not occurred, increases the percentage of the then outstanding voting securities Owned by the Subject Person over the designated percentage threshold, then a Change in Control will be deemed to occur;

(ii) there is consummated a merger, consolidation or similar transaction involving (directly or indirectly) the Company and, immediately after the consummation of such merger, consolidation or similar transaction, the stockholders of the Company immediately prior thereto do not Own, directly or indirectly, either (A) outstanding voting securities representing more than 50% of the combined outstanding voting power of the surviving Entity in such merger, consolidation or similar transaction or (B) more than 50% of the combined outstanding voting power of the parent of the surviving Entity in such merger, consolidation or similar transaction, in each case in substantially the same proportions as their Ownership of the outstanding voting securities of the Company immediately prior to such transaction;

(iii) there is consummated a sale, lease, exclusive license or other disposition of all or substantially all of the consolidated assets of the Company and its Subsidiaries, other than a sale, lease, license or other disposition of all or substantially all of the consolidated assets of the Company and its Subsidiaries to an Entity, more than 50% of the combined voting power of the voting securities of which are Owned by stockholders of the Company in substantially the same proportions as their Ownership of the outstanding voting securities of the Company immediately prior to such sale, lease, license or other disposition; or individuals who, on the Effective Date, are members of the Board (the "Incumbent Board") cease for any reason to constitute at least a majority of the members of the Board;

(iv) provided, however, that if the appointment or election (or nomination for election) of any new Board member was approved or recommended by a majority vote of the members of the Incumbent Board then still in office, such new member will, for purposes of this Plan, be considered as a member of the Incumbent Board.

Notwithstanding the foregoing definition or any other provision of this Plan, (A) the term Change in Control will not include a sale of assets, merger or other transaction effected exclusively for the purpose of changing the domicile of the Company, and (B) the definition of Change in Control (or any analogous term) in an individual written agreement between the Company or any Affiliate and the Participant will supersede the foregoing definition with respect to Awards subject to such agreement; provided, however, that if no definition of Change in Control or any analogous term is set forth in such an individual written agreement, the foregoing definition will apply.

If required for compliance with Section 409A of the Code, in no event will a Change in Control be deemed to have occurred if such transaction is not also a "change in the ownership or effective control of" the Company or "a change in the ownership of a substantial portion of the assets of" the Company as determined under U.S. Treasury Regulation Section 1.409A-3(i)(5) (without regard to any alternative definition thereunder). The Board may, in its sole discretion and without a Participant's consent, amend the definition of "Change in Control" to conform to the definition of "Change in Control" under Section 409A of the Code, and the regulations thereunder.

(h) "***Code***" means the U.S. Internal Revenue Code of 1986, as amended, including any applicable regulations and guidance thereunder.

(i) "***Committee***" means a committee of one (1) or more Directors to whom authority has been delegated by the Board in accordance with Section 2(c).

(j) "***Common Stock***" means the common stock of the Company.

(k) "***Company***" means Atara Biotherapeutics, Inc., a Delaware corporation.

(l) "***Consultant***" means any person, including an advisor, who is (i) engaged by the Company or an Affiliate to render consulting or advisory services and is compensated for such services, or (ii) serving as a member of the board of directors of an Affiliate and is compensated for such services. However, service solely as a Director, or payment of a fee for such service, will not cause a Director to be considered a "Consultant" for purposes of the Plan. Notwithstanding the foregoing, a person is treated as a Consultant under this Plan only if a Form S-8 Registration Statement under the Securities Act is available to register either the offer or the sale of the Company's securities to such person. Consultants are not eligible to receive Awards under this Plan with respect to their service in such capacity.

(m) "***Continuous Service***" means that the Participant's service with the Company or an Affiliate, whether as an Employee, Director or Consultant, is not interrupted or terminated. A change in the capacity in which the Participant renders service to the Company or an Affiliate as an Employee, Consultant or Director or a change in the Entity for which the Participant renders such service, provided that there is no interruption or termination of the Participant's service with the Company or an Affiliate, will not terminate a Participant's Continuous Service. For example, a change in status from an Employee of the Company to a Consultant of an Affiliate or to a Director will not constitute an interruption of Continuous Service. If the Entity for which a Participant is rendering services ceases to qualify as an Affiliate, as determined by the Board in its sole discretion, such Participant's Continuous Service will be considered to have terminated on the date such Entity ceases to qualify as an Affiliate. To the extent permitted by law, the Board or the chief executive officer of the Company, in that party's sole discretion, may determine whether Continuous Service will be considered interrupted in the case of (i) any leave of absence approved by the Board or chief executive officer, including sick leave, military leave or any other personal leave, or (ii) transfers between the Company, an Affiliate, or their successors. In addition, if required for exemption from or compliance with Section 409A of the Code, the determination of whether there has been a termination of Continuous Service will be made, and such term will be construed, in a manner that is consistent with the definition of "separation from service" as defined under U.S. Treasury Regulation Section 1.409A-1(h) (without regard to any alternative definition thereunder). A leave of absence will be treated as Continuous Service for purposes of vesting in a Stock Award only to such extent as may be provided in the Company's leave of absence policy, in the written terms of any leave of absence agreement or policy applicable to the Participant, or as otherwise required by law.

(n) "***Corporate Transaction***" means the consummation, in a single transaction or in a series of related transactions, of any one or more of the following events:

(i) a sale or other disposition of all or substantially all, as determined by the Board in its sole discretion, of the consolidated assets of the Company and its Subsidiaries;

(ii) a sale or other disposition of at least 90% of the outstanding securities of the Company;

(iii) a merger, consolidation or similar transaction following which the Company is not the surviving corporation; or

(iv) a merger, consolidation or similar transaction following which the Company is the surviving corporation but the shares of Common Stock outstanding immediately preceding the merger, consolidation or similar transaction are converted or exchanged by virtue of the merger, consolidation or similar transaction into other property, whether in the form of securities, cash or otherwise.

To the extent required for compliance with Section 409A of the Code, in no event will an event be deemed a Corporate Transaction if such transaction is not also a "change in the ownership or effective control of" the Company or "a change in the ownership of a substantial portion of the assets of" the Company as determined under U.S. Treasury Regulation Section 1.409A-3(i)(5) (without regard to any alternative definition thereunder).

(o) "***Director***" means a member of the Board. Directors are not eligible to receive Awards under this Plan with respect to their service in such capacity.

(p) "***Disability***" means, with respect to a Participant, the inability of such Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or that has lasted or can be expected to last for a continuous period of not less than 12 months as provided in Sections 22(e)(3) and 409A(a)(2)(C)(i) of the Code, and will be determined by the Board on the basis of such medical evidence as the Board deems warranted under the circumstances.

(q) "***Effective Date***" means the date this Plan is adopted by the Board.

(r) "***Employee***" means any person providing services as an employee of the Company or an Affiliate. However, service solely as a Director, or payment of a fee for such services, will not cause a Director to be considered an "Employee" for purposes of the Plan.

(s) "***Entity***" means a corporation, partnership, limited liability company or other entity.

(t) "***Exchange Act***" means the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

(u) "***Exchange Act Person***" means any natural person, Entity or "group" (within the meaning of Section 13(d) or 14 (d) of the Exchange Act), except that "Exchange Act Person" will not include (i) the Company or any Subsidiary of the Company, (ii) any employee benefit plan of the Company or any Subsidiary of the Company or any trustee or other fiduciary holding securities under an employee benefit plan of the Company or any Subsidiary of the Company, (iii) an underwriter temporarily holding securities pursuant to a registered public offering of such securities, (iv) an Entity Owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their Ownership of stock of the Company, or (v) any natural person, Entity or "group" (within the meaning of Section 13(d) or 14(d) of the Exchange Act) that, as of the Effective Date, is the Owner, directly or indirectly, of securities of the Company representing more than 50% of the combined voting power of the Company's then outstanding securities.

(v) "***Fair Market Value***" means, as of any date, the value of the Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or traded on any established market, the Fair Market Value of a share of Common Stock will be, unless otherwise determined by the Board, the closing sales price for such stock as quoted on such exchange or market (or the exchange or market with the greatest volume of trading in the Common Stock) on the date of determination, as reported in a source the Board deems reliable.

(ii) Unless otherwise provided by the Board, if there is no closing sales price for the Common Stock on the date of determination, then the Fair Market Value will be the closing selling price on the last preceding date for which such quotation exists.

(iii) In the absence of such markets for the Common Stock, the Fair Market Value will be determined by the Board in good faith and in a manner that complies with Section 409A of the Code.

(w) "***Non-Employee Director***" means a Director who either (i) is not a current employee or officer of the Company or an Affiliate, does not receive compensation, either directly or indirectly, from the Company or an Affiliate for services rendered as a consultant or in any capacity other than as a Director (except for an amount as to which disclosure would not be required under Item 404(a) of Regulation S-K promulgated pursuant to the Securities Act ("Regulation S-K")), does not possess an interest in any other transaction for which disclosure would be required under Item 404(a) of Regulation S-K, and is not engaged in a business relationship for which disclosure would be required pursuant to Item 404(b) of Regulation S-K; or (ii) is otherwise considered a "non-employee director" for purposes of Rule 16b-3 of the Exchange Act.

(x) "***Nonstatutory Stock Option***" means any option granted pursuant to Section 5 of the Plan that does not qualify as an "incentive stock option" (within the meaning of Section 422 of the Code).

(y) "***Officer***" means a person who is an officer of the Company within the meaning of Section 16 of the Exchange Act.

(z) "***Option***" means a Nonstatutory Stock Option to purchase shares of Common Stock granted pursuant to the Plan. For the avoidance of doubt, an "incentive stock option" (within the meaning of Section 422 of the Code) is not a permissible Award under the Plan.

(aa) "***Option Agreement***" means a written agreement between the Company and an Optionholder evidencing the terms and conditions of an Option grant. Each Option Agreement will be subject to the terms and conditions of the Plan.

(bb) "***Optionholder***" means a person to whom an Option is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Option.

(cc) "***Other Stock Award***" means an award based in whole or in part by reference to the Common Stock which is granted pursuant to the terms and conditions of Section 6(d).

(dd) "***Other Stock Award Agreement***" means a written agreement between the Company and a holder of an Other Stock Award evidencing the terms and conditions of an Other Stock Award grant. Each Other Stock Award Agreement will be subject to the terms and conditions of the Plan.

(ee) "***Own***," "***Owned***," "***Owner***," "***Ownership***" means a person or Entity will be deemed to "Own," to have "Owned," to be the "Owner" of, or to have acquired "Ownership" of securities if such person or Entity, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has or shares voting power, which includes the power to vote or to direct the voting, with respect to such securities.

(ff) "***Participant***" means a person to whom an Award is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Stock Award.

(gg) "***Performance Cash Award***" means an award of cash granted pursuant to the terms and conditions of Section 6 (c)(ii).

(hh) "***Performance Criteria***" includes but is not limited to any one of, or combination of, the following as determined by the Board: (1) profit before tax; (2) billings; (3) revenue; (4) net revenue; (5) earnings (which may include earnings before interest and taxes, earnings before taxes, and net earnings); (6) operating income; (7) operating margin; (8) operating profit; (9) controllable operating profit, or net operating profit; (10) net profit; (11) gross margin; (12) operating expenses or operating expenses as a percentage of revenue; (13) net income; (14) earnings per share; (15) total stockholder return; (16) market share; (17) return on assets or net assets; (18) the Company's stock price; (19) growth in stockholder value relative to a pre-determined index; (20) return on equity; (21) return on invested capital; (22) cash flow (including free cash flow or operating cash flows); (23) cash conversion cycle; (24) economic value added; (25) individual confidential business objectives; (26) contract awards or backlog; (27) overhead or other expense reduction; (28) credit rating; (29) strategic plan development and implementation; (30) succession plan development and implementation; (31) improvement in workforce diversity; (32) customer indicators; (33) new product invention or innovation; (34) attainment of research and development milestones; (35) improvements in productivity; (36) bookings; (37) initiation of phases of clinical trials and/or studies by specified dates; (38) regulatory body approval with respect to products, studies and/or trials; (39) patient enrollment dates; (40) commercial launch of products; and (41) other measures of performance selected by the Board.

(ii) "***Performance Goals***" means, for a Performance Period, the one or more goals established by the Board for the Performance Period based upon the Performance Criteria. Performance Goals may be based on a Company-wide basis, with respect to one or more business units, divisions, Affiliates, or business segments, and in either absolute terms or relative to the performance of one or more comparable companies or the performance of one or more relevant indices. Unless specified otherwise by the Board (i) in the Award Agreement at the time the Award is granted or (ii) in such other document setting forth the Performance Goals at the time the Performance Goals are established, the Board will appropriately make adjustments in the method of calculating the attainment of Performance Goals for a Performance Period as follows: (1) to exclude restructuring and/or other nonrecurring charges; (2) to exclude exchange rate effects; (3) to exclude the effects of changes to generally accepted accounting principles; (4) to exclude the effects of any statutory adjustments to corporate tax rates; (5) to exclude the effects of any "extraordinary items" as determined under generally accepted accounting principles; (6) to exclude the dilutive effects of acquisitions or joint ventures; (7) to assume that any business divested by the Company achieved performance objectives at targeted levels during the balance of a Performance Period following such divestiture; (8) to exclude the effect of any change in the outstanding shares of common stock of the Company by reason of any stock dividend or split, stock repurchase, reorganization, recapitalization, merger, consolidation, spin-off, combination or exchange of shares or other similar corporate change, or any distributions to common stockholders other than regular cash dividends; (9) to exclude the effects of stock based compensation and the award of bonuses under the Company's bonus plans; (10) to exclude costs incurred in connection with potential acquisitions or divestitures that are required to expensed under generally accepted accounting principles; (11) to exclude the goodwill and intangible asset impairment charges that are required to be recorded under generally accepted accounting principles; (12) to exclude the effect of any other unusual, non-recurring gain or loss or other extraordinary item; (13) to exclude the effects of the timing of acceptance for review and/or approval of submissions to the Food and Drug Administration or any other regulatory body; and (14) to exclude the effects of entering into or achieving milestones involved in licensing joint ventures. In addition, the Board retains the discretion to reduce or eliminate the compensation or economic benefit due upon attainment of Performance Goals and to define the manner of calculating the Performance Criteria it selects to use for such Performance Period. Partial achievement of the specified criteria may result in the payment or vesting corresponding to the degree of achievement as specified in the Stock Award Agreement or the written terms of a Performance Cash Award.

(jj) "***Performance Period***" means the period of time selected by the Board over which the attainment of one or more Performance Goals will be measured for the purpose of determining a Participant's right to and the payment of a Stock Award or a Performance Cash Award. Performance Periods may be of varying and overlapping duration, at the sole discretion of the Board.

(kk) "***Performance Stock Award***" means a Stock Award granted under the terms and conditions of Section 6(c)(i).

(ll) "***Plan***" means this Atara Biotherapeutics, Inc. Amended and Restated 2018 Inducement Plan.

(mm) "***Restricted Stock Award***" means an award of shares of Common Stock which is granted pursuant to the terms and conditions of Section 6(a).

(nn) "***Restricted Stock Award Agreement***" means a written agreement between the Company and a holder of a Restricted Stock Award evidencing the terms and conditions of a Restricted Stock Award grant. Each Restricted Stock Award Agreement will be subject to the terms and conditions of the Plan.

(oo) "***Restricted Stock Unit Award***" means a right to receive shares of Common Stock which is granted pursuant to the terms and conditions of Section 6(b).

(pp) "***Restricted Stock Unit Award Agreement***" means a written agreement between the Company and a holder of a Restricted Stock Unit Award evidencing the terms and conditions of a Restricted Stock Unit Award grant. Each Restricted Stock Unit Award Agreement will be subject to the terms and conditions of the Plan.

(qq) "***Securities Act***" means the U.S. Securities Act of 1933, as amended.

(rr) "***Stock Appreciation Right***" or "***SAR***" means a right to receive the appreciation on Common Stock that is granted pursuant to the terms and conditions of Section 5.

(ss) "***Stock Appreciation Right Agreement***" means a written agreement between the Company and a holder of a Stock Appreciation Right evidencing the terms and conditions of a Stock Appreciation Right grant. Each Stock Appreciation Right Agreement will be subject to the terms and conditions of the Plan.

(tt) "***Stock Award***" means any right to receive Common Stock granted under the Plan, including a Nonstatutory Stock Option, a Restricted Stock Award, a Restricted Stock Unit Award, a Stock Appreciation Right, a Performance Stock Award, or any Other Stock Award.

(uu) "***Stock Award Agreement***" means a written agreement between the Company and a Participant evidencing the terms and conditions of a Stock Award grant. Each Stock Award Agreement will be subject to the terms and conditions of the Plan.

(vv) "***Subsidiary***" means, with respect to the Company, (i) any corporation of which more than 50% of the outstanding capital stock having ordinary voting power to elect a majority of the board of directors of such corporation (irrespective of whether, at the time, stock of any other class or classes of such corporation will have or might have voting power by reason of the happening of any contingency) is at the time, directly or indirectly, Owned by the Company, and (ii) any partnership, limited liability company or other entity in which the Company has a direct or indirect interest (whether in the form of voting or participation in profits or capital contribution) of more than 50%.

FIRST AMENDMENT TO LEASE

THIS FIRST AMENDMENT TO LEASE (this " **First Amendment**") is made as of October 21, 2020, by and between **611 GATEWAY CENTER LP**, a Delaware limited partnership ("**Landlord**"), and **ATARA BIOTHERAPEUTICS, INC.**, a Delaware corporation ("**Tenant**").

RECITALS

A. Landlord and Tenant are now parties to that certain Office Lease dated as of November 25, 2015 (the " **Lease**"). Pursuant to the Lease, Tenant leases certain premises commonly known as Suite 900 containing approximately 13,670 rentable square feet (the "**Premises**") in that certain building located at 611 Gateway Boulevard, South San Francisco, California (the "**Building**"), as more particularly described in the Lease. Capitalized terms used herein without definition shall have the meanings defined for such terms in the Lease.

B. The Lease Term is scheduled to expire on May 31, 2021.

C. Landlord and Tenant desire to amend the Lease to, among other things, extend the Lease Term through May 31, 2022 (the " **First Amendment Expiration Date**").

NOW, THEREFORE, in consideration of the foregoing Recitals, which are incorporated herein by this reference, the mutual promises and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. **Extension of Lease Term**. Notwithstanding anything to the contrary contained in the Lease, the Lease Term is hereby extended through the First Amendment Expiration Date. Tenant's continued occupancy of the Premises shall be on an "as-is" basis and Landlord shall have no obligation to provide any tenant improvement allowance or make any alterations to the Premises.

2. **Base Rent**. Tenant shall continue to pay Base Rent and all other amounts due under the Lease as provided under the Lease through May 31, 2021. Commencing on June 1, 2021, in addition to all other amounts due under the Lease, Base Rent for the Premises shall be $3.90 per rentable square foot of the Premises per month. Base Rent adjustments with respect to the Premises for any fractional calendar month shall be prorated.

3. **Base Year**. For the period of the Lease Term between June 1, 2021 and May 31, 2022, the Base Year of the Lease shall mean calendar year 2021. For the avoidance of any doubt, Tenant shall not, during the period between June 1, 2021 and December 31, 2021, be required to pay any Excess, but Tenant shall, during the period between January 1, 2022 and May 31, 2022, be required to pay any Excess (but with a Base Year of calendar year 2021).

4. **No Right of First Offer**. As of the date of this First Amendment, Section 1.3 of the Lease is hereby deleted in its entirety and is null and void and of no further force or effect.

5. **Right to Extend Term**. Tenant shall have the right to extend the Lease Term with respect to the entire Premises only upon the following terms and conditions:

(a) **Extension Right**. Tenant shall have 1 right (the "**Extension Right**") to extend the Lease Term for 5 years (the " **Extension Term**") on the same terms and conditions as this Lease (other than Base Rent, Base Year of calendar 2021 and the Tenant Work Letter) by giving Landlord written notice of its election to exercise the Extension Right at least 7 months prior to the First Amendment Expiration Date.

Upon the commencement of the Extension Term, Base Rent shall be payable at the Market Rate (as defined below). Base Rent shall thereafter be adjusted on each annual anniversary of the commencement of such Extension Term by a percentage as determined by Landlord and agreed to by Tenant at the time the Market Rate is determined. As used herein, "**Market Rate**" shall mean the rate (plus all Operating Expenses, Direct Expenses, Building Direct Expenses, Capital Expenses and Tax Expenses) that comparable landlords of comparable buildings have accepted in current transactions from non-equity (i.e., not being offered equity in the buildings) and nonaffiliated tenants of similar financial strength for space of comparable size, quality (including all Tenant Improvements, Alterations and other improvements) and floor height in Class A laboratory/office buildings in South San Francisco for a comparable term, with the determination of the Market Rate to take into account all relevant factors, including tenant inducements, available amenities, parking costs, leasing commissions, allowances or concessions, if any.

If, on or before the date which is 180 days prior to the expiration of the Lease Term, Tenant has not agreed with Landlord's determination of the Market Rate and the rent adjustments during the applicable Extension Term after negotiating in good faith, Tenant shall be deemed to have elected arbitration as described in Section 5(b). Tenant acknowledges and agrees that, if Tenant has elected to exercise the Extension Right by delivering notice to Landlord as required in this Section 5(a), Tenant shall have no right thereafter to rescind or elect not to extend the term of the Lease for the Extension Term.

(b) **Arbitration**.

(i) Within 10 days of Tenant's notice to Landlord of its election (or deemed election) to arbitrate Market Rate and adjustments, each party shall deliver to the other a proposal containing the Market Rate and adjustments that the submitting party believes to be correct ("**Extension Proposal**"). If either party fails to timely submit an Extension Proposal, the other party's submitted proposal shall determine the Base Rent and adjustments for the Extension Term. If both parties submit Extension Proposals, then Landlord and Tenant shall meet within 7 days after delivery of the last Extension Proposal and make a good faith attempt to mutually appoint a single Arbitrator (and defined below) to determine the Market Rate and adjustments. If Landlord and Tenant are unable to agree upon a single Arbitrator, then each shall, by written notice delivered to the other within 10 days after the meeting, select an Arbitrator. If either party fails to timely give notice of its selection for an Arbitrator, the other party's submitted proposal shall determine the Base Rent for the Extension Term. The 2 Arbitrators so appointed shall, within 5 business days after their appointment, appoint a third Arbitrator. If the 2 Arbitrators so selected cannot agree on the selection of the third Arbitrator within the time above specified, then either party, on behalf of both parties, may request such appointment of such third Arbitrator by application to any state court of general jurisdiction in the jurisdiction in which the Premises are located, upon 10 days prior written notice to the other party of such intent.

(ii) The decision of the Arbitrator(s) shall be made within 30 days after the appointment of a single Arbitrator or the third Arbitrator, as applicable. The decision of the single Arbitrator shall be final and binding upon the parties. The average of the two closest Arbitrators in a three Arbitrator panel shall be final and binding upon the parties. Each party shall pay the fees and expenses of the Arbitrator appointed by or on behalf of such party and the fees and expenses of the third Arbitrator shall be borne equally by both parties. If the Market Rate and adjustments are not determined by the first day of the Extension Term, then Tenant shall pay Landlord Base Rent in an amount equal to the Base Rent in effect immediately prior to the Extension Term and increased by 3% until such determination is made. After the determination of the Market Rate and adjustments, the parties shall make any necessary adjustments to such payments made by Tenant. Landlord and Tenant shall then execute an amendment recognizing the Market Rate and adjustments for the Extension Term.

(iii) An "**Arbitrator**" shall be any person appointed by or on behalf of either party or appointed pursuant to the provisions hereof and: (i) shall be (A) a member of the American Institute

of Real Estate Appraisers with not less than 10 years of experience in the appraisal of improved office and high tech industrial real estate in the greater South San Francisco metropolitan area, or (B) a licensed commercial real estate broker with not less than 15 years' experience representing landlords and/or tenants in the leasing of high tech or life sciences space in the greater South San Francisco metropolitan area, (ii) devoting substantially all of their time to professional appraisal or brokerage work, as applicable, at the time of appointment and (iii) be in all respects impartial and disinterested.

(c) **Rights Personal**. The Extension Right is personal to Tenant and is not assignable without Landlord's consent, which may be granted or withheld in Landlord's sole discretion separate and apart from any consent by Landlord to an assignment of Tenant's interest in the Lease.

(d) **Exceptions**. Notwithstanding anything set forth above to the contrary, the Extension Right shall, at Landlord's option, not be in effect and Tenant may not exercise the Extension Right:

(i) during any period of time that Tenant is in default under any provision of the Lease; or

(ii) if Tenant has been in default under any provision of the Lease 3 or more times, whether or not the defaults are cured, during the 12 month period immediately prior to the date that Tenant intends to exercise the Extension Right, whether or not the defaults are cured.

(e) **No Extensions**. The period of time within which the Extension Right may be exercised shall not be extended or enlarged by reason of Tenant's inability to exercise the Extension Right.

(f) **Termination**. The Extension Right shall, at Landlord's option, terminate and be of no further force or effect even after Tenant's due and timely exercise of the Extension Right, if, after such exercise, but prior to the commencement date of the Extension Term, (i) Tenant fails to timely cure any default by Tenant under the Lease; or (ii) Tenant has defaulted 3 or more times during the period from the date of the exercise of the Extension Right to the date of the commencement of the Extension Term, whether or not such defaults are cured.

6. **Brokers**. Landlord and Tenant each represents and warrants that it has not dealt with any broker, agent or other person (collectively, " **Broker**") in connection with the transaction reflected in this First Amendment and that no Broker brought about this transaction, other than Cushman & Wakefield. Landlord and Tenant each hereby agree to indemnify and hold the other harmless from and against any claims by any Broker, other than Cushman & Wakefield, claiming a commission or other form of compensation by virtue of having dealt with Tenant or Landlord, as applicable, with regard to this leasing transaction.

7. **OFAC**. Tenant and all beneficial owners of Tenant are currently (a) in compliance with and shall at all times during the Lease Term remain in compliance with the regulations of the Office of Foreign Assets Control ("**OFAC**") of the U.S. Department of Treasury and any statute, executive order, or regulation relating thereto (collectively, the "**OFAC Rules**"), (b) not listed on, and shall not during the Lease Term be listed on, the Specially Designated Nationals and Blocked Persons List, Foreign Sanctions Evaders List or the Sectoral Sanctions Identifications List, which are all maintained by OFAC and/or on any other similar list maintained by OFAC or other governmental authority pursuant to any authorizing statute, executive order, or regulation, and (c) not a person or entity with whom a U.S. person is prohibited from conducting business under the OFAC Rules.

8. **Miscellaneous**.

a. This First Amendment is the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior and contemporaneous oral and written agreements

and discussions. This First Amendment may be amended only by an agreement in writing, signed by the parties hereto.

b. This First Amendment is binding upon and shall inure to the benefit of the parties hereto, their respective agents, employees, representatives, officers, directors, divisions, subsidiaries, affiliates, assigns, heirs, successors in interest and shareholders.

c. This First Amendment may be executed in 2 or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf or any electronic signature process complying with the U.S. federal ESIGN Act of 2000) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes. Electronic signatures shall be deemed original signatures for purposes of this First Amendment and all matters related thereto, with such electronic signatures having the same legal effect as original signatures.

d. Except as amended and/or modified by this First Amendment, the Lease is hereby ratified and confirmed and all other terms of the Lease shall remain in full force and effect, unaltered and unchanged by this First Amendment. In the event of any conflict between the provisions of this First Amendment and the provisions of the Lease, the provisions of this First Amendment shall prevail. Whether or not specifically amended by this First Amendment, all of the terms and provisions of the Lease are hereby amended to the extent necessary to give effect to the purpose and intent of this First Amendment.

[Signatures are on the next page]

IN WITNESS WHEREOF, the parties hereto have executed this First Amendment as of the day and year first above written.

TENANT:

ATARA BIOTHERAPEUTICS, INC.,
a Delaware corporation

By: /s/ Amar Murugan
Name: Amar Murugan
Title: SVP and General Counsel

By: /s/ Steve Bertram
Name: Steve Bertram
Title: SVP Global HR

LANDLORD:

611 GATEWAY CENTER LP,
a Delaware limited partnership

By: GATEWAY CENTER GP LLC,
a Delaware limited liability company,
general partner

By: GATEWAY PORTFOLIO MEMBER LLC,
a Delaware limited liability company,
managing member

By: GATEWAY PORTFOLIO HOLDINGS LLC,
a Delaware limited liability company,
managing member

By: ARE-SAN FRANCISCO NO. 83, LLC,
a Delaware limited liability company,
managing member

By: ALEXANDRIA REAL ESTATE EQUITIES, L.P.,
a Delaware limited partnership,
managing member

By: ARE-QRS CORP.,
a Maryland corporation,
general partner

By: /s/ Kurt Child
Its: VP Real Estate Legal Affairs

Exhibit 31.1

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER

PURSUANT TO

SECURITIES EXCHANGE ACT RULES 13A-14(A) AND 15D-14(A)

I, Pascal Touchon, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Atara Biotherapeutics, 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 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 functions):

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

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

Date: November 9, 2020

/s/ Pascal Touchon
Pascal Touchon
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER

PURSUANT TO

SECURITIES EXCHANGE ACT RULES 13A-14(A) AND 15D-14(A)

I, Utpal Koppikar certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Atara Biotherapeutics, 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 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 functions):

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

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

Date: November 9, 2020

/s/ Utpal Koppikar
Utpal Koppikar
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

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 of Atara Biotherapeutics, Inc. (the "Company") on Form 10-Q for the quarter ended September 30, 2020, as filed with the Securities and Exchange Commission (the "Report"), Pascal Touchon, Chief Executive Officer of the Company, and Utpal Koppikar, Chief Financial Officer of the Company, respectively, do each hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: November 9, 2020

/s/ Pascal Touchon
Pascal Touchon
Chief Executive Officer
(Principal Executive Officer)

/s/ Utpal Koppikar
Utpal Koppikar
Chief Financial Officer
(Principal Financial and Accounting Officer)

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version 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.