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

FORM 10-Q

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

For the quarterly period ended June 30, 2019

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

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 ☒

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**

The number of outstanding shares of the Registrant's Common Stock as of July 31, 2019 was 53,757,962 shares.

ATARA BIOTHERAPEUTICS, INC.

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

	June 30, 2019	December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	$ 59,159	$ 60,698
Short-term investments	130,976	248,933
Restricted cash - short-term	194	194
Prepaid expenses and other current assets	10,810	11,664
Total current assets	201,139	321,489
Property and equipment, net	57,090	68,576
Operating lease assets	14,396	—
Restricted cash - long-term	1,200	1,200
Other assets	319	574
Total assets	$ 274,144	$ 391,839
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 6,420	$ 3,719
Accrued compensation	7,822	10,636
Accrued research and development expenses	5,139	19,210
Other current liabilities	6,422	6,414
Total current liabilities	25,803	39,979
Operating lease liabilities - long-term	14,919	—
Other long-term liabilities	1,143	13,003
Total liabilities	41,865	52,982
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Common stock—$0.0001 par value, 500,000 shares authorized as of June 30, 2019 and December 31, 2018, respectively; 46,883 and 45,951 shares issued and outstanding as of June 30, 2019 and December 31, 2018, respectively	5	5
Additional paid-in capital	899,671	866,541
Accumulated other comprehensive income (loss)	173	(340)
Accumulated deficit	(667,570)	(527,349)
Total stockholders' equity	232,279	338,857
Total liabilities and stockholders' equity	$ 274,144	$ 391,839

See accompanying notes.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Operating expenses:				
Research and development	$ 52,251	$ 33,387	$ 100,919	$ 61,847
General and administrative	23,284	19,236	42,507	33,228
Total operating expenses	75,535	52,623	143,426	95,075
Loss from operations	(75,535)	(52,623)	(143,426)	(95,075)
Interest and other income, net	1,207	1,743	2,841	2,752
Loss before provision for income taxes	(74,328)	(50,880)	(140,585)	(92,323)
Provision for income taxes	—	3	—	3
Net loss	$ (74,328)	$ (50,883)	$ (140,585)	$ (92,326)
Other comprehensive loss:				
Unrealized gain (loss) on available-for-sale securities	135	19	513	(354)
Comprehensive loss	$ (74,193)	$ (50,864)	$ (140,072)	$ (92,680)
Net loss per common share:				
Basic and diluted net loss per common share	$ (1.60)	$ (1.15)	$ (3.04)	$ (2.20)
Weighted-average shares outstanding used to calculate basic and diluted net loss per common share	46,426	44,379	46,276	42,001

See accompanying notes.

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

For the Six Months Ended June 30, 2019	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	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 Facility, 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

For the Six Months Ended June 30, 2018	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
Balance as of December 31, 2017	30,730	$ 3	$ 474,662	$ (151)	$ (296,650)	$ 177,864
Issuance of common stock through underwritten offerings, net of commissions and offering costs of $526	12,604	1	293,288	—	—	293,289
RSU settlements, net of shares withheld	250	—	(3,363)	—	—	(3,363)
Issuance of common stock pursuant to employee stock awards	309	—	6,196	—	—	6,196
Stock-based compensation expense	—	—	7,014	—	—	7,014
Net loss	—	—	—	—	(41,443)	(41,443)
Unrealized loss on available-for-sale securities	—	—	—	(373)	—	(373)
Balance as of March 31, 2018	43,893	4	777,797	(524)	(338,093)	439,184
Issuance of common stock through ATM Facility, net of commissions and offering costs of $1,310	1,008	1	47,586	—	—	47,587
RSU settlements, net of shares withheld	42	—	(67)	—	—	(67)
Issuance of common stock pursuant to employee stock awards	391	—	8,661	—	—	8,661
Stock-based compensation expense	—	—	7,998	—	—	7,998
Net loss	—	—	—	—	(50,883)	(50,883)
Unrealized gain on available-for-sale securities	—	—	—	19	—	19
Balance as of June 30, 2018	45,334	$ 5	$ 841,975	$ (505)	$ (388,976)	$ 452,499

See accompanying notes.

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

	Six Months Ended June 30,	
	2019	**2018**
Operating activities		
Net loss	$ (140,585)	$ (92,326)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	27,470	15,013
Accretion of investment discounts	(817)	(756)
Depreciation and amortization expense	3,385	1,064
Loss on disposals of property and equipment	127	—
Non-cash interest expense	—	125
Asset retirement obligation accretion expense	35	16
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	720	(1,961)
Operating lease assets	814	—
Other assets	255	(102)
Accounts payable	2,649	(207)
Accrued compensation	(2,814)	(388)
Accrued research and development expenses	(14,071)	2,655
Other current liabilities	(1,658)	2,545
Operating lease liabilities	(299)	—
Other long-term liabilities	—	66
Net cash used in operating activities	(124,789)	(74,256)
Investing activities		
Purchases of short-term investments	(17,589)	(357,647)
Proceeds from maturities and sales of short-term investments	136,876	131,110
Purchases of property and equipment	(1,534)	(27,257)
Proceeds from sale of property and equipment	96	—
Net cash provided by (used in) investing activities	117,849	(253,794)
Financing activities		
Proceeds from sale of common stock in underwritten offerings, net	—	293,290
Proceeds from issuance of common stock through ATM facility, net	7,630	47,586
Proceeds from employee stock awards	4,676	14,857
Taxes paid related to net share settlement of restricted stock units	(6,670)	(3,431)
Principal payments on finance and capital lease obligations	(235)	(272)
Net cash provided by financing activities	5,401	352,030
(Decrease) increase in cash, cash equivalents and restricted cash	(1,539)	23,980
Cash, cash equivalents and restricted cash at beginning of period	62,092	80,617
Cash, cash equivalents and restricted cash at end of period	$ 60,553	$ 104,597
Non-cash investing and financing activities		
Property and equipment purchases included in accounts payable and other accrued liabilities	$ 473	$ 5,078
Capitalized lease obligations	$ —	$ 441
Property & equipment acquired under capital leases	$ —	$ 191
Asset retirement cost	$ —	$ 88
Interest capitalized during construction period for build-to-suit lease transaction	$ —	$ 77
Receivable for options exercised	$ 24	$ —
Supplemental cash flow disclosure		
Cash paid for interest	$ 31	$ 67

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 leading off-the-shelf, allogeneic T-cell immunotherapy company that is developing novel treatments for patients with cancer, autoimmune and viral diseases. We have several T-cell immunotherapies in clinical development and are progressing a next-generation allogeneic chimeric antigen receptor T-cell, or CAR T, program.

We licensed rights to T-cell product candidates from Memorial Sloan Kettering Cancer Center ("MSK") in June 2015 and licensed rights related to our next-generation CAR T programs from MSK in May 2018 and December 2018 and from Moffitt Cancer Center in August 2018. Additionally, we licensed rights to know-how and technology from the Council of the Queensland Institute of Medical Research ("QIMR Berghofer") in October 2015, September 2016 and June 2018. See Note 6 for further information.

We have incurred significant operating losses since inception and have relied on public and private equity financings to fund our operations. As of June 30, 2019, we had an accumulated deficit of $667.6 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.

In July 2019, we completed an underwritten public offering of shares of common stock and pre-funded warrants and received aggregate net proceeds of approximately $140.6 million (see Note 10). Management expects that our cash, cash equivalents and short-term investments, together with the net proceeds from the underwritten public offering in July 2019, will be sufficient to fund our planned operations into 2021.

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, 2018, except for the recognition of operating lease assets and operating lease liabilities effective January 1, 2019, in accordance with newly-adopted accounting pronouncements relating to leases 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, 2018 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.

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.

Leases

We lease office space in multiple locations. We determine if an arrangement is a lease at inception. Operating leases are included in operating lease assets, other current liabilities, and operating lease liabilities on our condensed consolidated balance sheets. Leases with an initial term of 12 months or less are not recorded on the balance sheet; we recognize lease expense for these leases on a straight-line basis over the lease term. Finance leases are included in property and equipment, other current liabilities, and other long-term liabilities on our condensed consolidated balance sheets.

Operating lease assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. The incremental borrowing rate for our leases is determined based on lease term and currency in which lease payments are made, adjusted for impacts of collateral. The operating lease asset also includes any lease payments made and excludes lease incentives and initial direct costs incurred. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term.

Our facilities and equipment operating leases have lease and non-lease components and we have made a policy election to account for the lease and non-lease components as a single lease component.

Through December 31, 2018, the leases were reviewed for classification as operating, capital or build-to-suit leases. For operating leases, rent was recognized on a straight-line basis over the lease period. For capital leases, we recorded the leased asset with a corresponding liability for principal and interest. Payments were recorded as reductions to these liabilities with interest being charged to interest expense in our condensed consolidated statements of operations and comprehensive loss.

We analyzed the nature of the renovations and our involvement during the construction period of our manufacturing facility and determined that we were the deemed "owner" of the construction project during the construction period. As a result, we were required to capitalize the fair value of the building as well as the construction costs incurred on our condensed consolidated balance sheet along with a corresponding financing liability for landlord-paid construction costs (i.e. "build-to-suit" accounting).

Once construction was complete, the Company considered the requirements for sale-leaseback accounting treatment, including evaluating whether all risks of ownership have been transferred back to the landlord, as evidenced by a lack of continuing involvement in the leased property. Since the arrangement did not qualify for sale-leaseback accounting treatment, the building asset remained on the Company's condensed consolidated balance sheets at its historical cost, and such asset was depreciated over its estimated useful life. The Company bifurcated its lease payments into a portion allocated to the building and a portion allocated to the parcel of land on which the building has been built. The portion of the lease payments allocated to the land was treated for accounting purposes as operating lease payments, and therefore was recorded as rent expense in the condensed consolidated statements of operations and comprehensive loss. The portion of the lease payments allocated to the building was further bifurcated into a portion allocated to interest expense and a portion allocated to reduce the build-to-suit lease obligation. The initial recording of these assets and liabilities were classified as non-cash investing and financing items, respectively, for purposes of the condensed consolidated statements of cash flows. The build-to-suit asset and corresponding lease obligation was derecognized upon adoption of the new lease standard as we did not control the building during the construction period.

Recent Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-13,*Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments*, which was clarified and amended by the issuances of ASUs 2018-19, 2019-04 and 2019-05 in November 2018, April 2019 and May 2019, respectively. These ASUs require that expected credit losses relating to financial assets measured on an amortized cost basis and available-for-sale debt securities be recorded through an allowance for credit losses. The guidance limits the amount of credit losses to be recognized for available-for-sale debt securities to the amount by which carrying value exceeds fair value and also requires the reversal of previously recognized credit losses if fair value increases. The new standard will be effective for us on January 1, 2020. We are currently assessing the potential effect the new standard will have on our consolidated financial statements.

In August 2018, the FASB issued 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* (ASU 2018-15), which clarifies the accounting for implementation costs in cloud computing arrangements. The new standard is effective for fiscal years and interim periods within those fiscal years beginning after December 15, 2019, with early adoption permitted. We plan to adopt the new guidance on January 1, 2020. We are currently assessing the potential effect the new standard will have on our consolidated financial statements.

Adoption of New Accounting Pronouncements

We adopted ASU No. 2016-02, Leases (Topic 842), as of January 1, 2019, using the optional transition method, which allows for the initial application of the new accounting standard at the adoption date and the recognition of a cumulative-effect adjustment to the opening balance of retained earnings as of the beginning of the period of adoption. In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to carry forward the historical lease classification. In addition, we elected the hindsight practical expedient to determine the lease term for existing leases.

Adoption of the new standard resulted in the recording of additional operating lease assets and operating lease liabilities of $14.3 million and $15.3 million, respectively, as of January 1, 2019. This was partially offset by de-recognition of the build-to-suit asset and corresponding lease obligation of $10.3 million for our Thousand Oaks manufacturing facility lease, as we did not control the building during the construction period (see Note 7). The cumulative effect adjustment to the opening balance of accumulated deficit was a decrease of $0.4 million. The standard did not have a significant impact on our condensed consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flow for the three and six months ended June 30, 2019 and 2018.

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 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 and common share equivalents outstanding for the period. 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"), 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 June 30,	
	2019	2018
Unvested RSUs	1,531,211	1,797,702
Vested and unvested options	7,291,729	5,718,914
ESPP share purchase rights	15,296	9,366
Total	8,838,236	7,525,982

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 June 30, 2019:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 36,621	$ —	$ —	$ 36,621
U.S. Treasury obligations	Level 2	69,324	49	(1)	69,372
Government agency obligations	Level 2	9,079	1	(4)	9,076
Corporate debt obligations	Level 2	63,788	135	(6)	63,917
Commercial paper	Level 2	2,846	—	—	2,846
Asset-backed securities	Level 2	5,270	—	(1)	5,269
Total available-for-sale securities		186,928	185	(12)	187,101
Less: amounts classified as cash equivalents		(56,124)	(1)	—	(56,125)
Amounts classified as short-term investments		$ 130,804	$ 184	$ (12)	$ 130,976

As of December 31, 2018:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 38,708	$ —	$ —	$ 38,708
U.S. Treasury obligations	Level 2	111,164	4	(80)	111,088
Government agency obligations	Level 2	15,206	1	(32)	15,175
Corporate debt obligations	Level 2	121,017	15	(217)	120,815
Commercial paper	Level 2	12,935	—	—	12,935
Asset-backed securities	Level 2	11,894	—	(31)	11,863
Total available-for-sale securities		310,924	20	(360)	310,584
Less: amounts classified as cash equivalents		(61,651)	—	—	(61,651)
Amounts classified as short-term investments		$ 249,273	$ 20	$ (360)	$ 248,933

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

	As of June 30, 2019		As of December 31, 2018	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
	(in thousands)		(in thousands)	
Maturing within one year	$ 178,095	$ 178,197	$ 287,755	$ 287,469
Maturing in one to five years	8,833	8,904	23,169	23,115
Total available-for-sale securities	$ 186,928	$ 187,101	$ 310,924	$ 310,584

As of June 30, 2019, certain available-for-sale securities had been in a continuous unrealized loss position, each for less than twelve months. As of this date, no significant facts or circumstances were present to indicate a deterioration in the creditworthiness of the respective issuers, and the Company has no requirement or intention to sell these securities before maturity or recovery of their amortized cost basis. During the three and six months ended June 30, 2019 and 2018, we did not recognize any other-than-temporary impairment losses.

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 June 30, 2019 and December 31, 2018, 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:

	June 30, 2019	December 31, 2018
	(in thousands)	
Cash and cash equivalents	$ 59,159	$ 60,698
Restricted cash - short term	194	194
Restricted cash - long term	1,200	1,200
Total cash, cash equivalents and restricted cash	$ 60,553	$ 62,092

5. Property and Equipment

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

	June 30, 2019	December 31, 2018
	(in thousands)	
Leasehold improvements	$ 48,993	$ 47,609
Build-to-suit asset (see Note 7)	—	10,686
Construction in progress	3,533	4,682
Computer equipment and software	3,235	3,049
Lab equipment	4,624	3,019
Machinery and equipment	3,193	2,980
Furniture and fixtures	1,674	1,628
Property and equipment, gross	65,252	73,653
Accumulated depreciation and amortization	(8,162)	(5,077)
Property and equipment, net	$ 57,090	$ 68,576

Construction in progress represents capitalized costs for our manufacturing facility in Thousand Oaks, California and capitalizable costs incurred for development of internal use software. Depreciation and amortization expense was $1.8 million and $0.7 million for the three months ended June 30, 2019 and 2018, respectively and $3.4 million and $1.1 million for the six months ended June 30, 2019 and 2018, 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 therapiesIn connection with the execution of the agreement, the Company paid $4.5 million in cash to MSK.

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 December 2018, we licensed additional technology from MSK. In connection with the effectiveness of this 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. In consideration for the exclusive license, the Company paid $3.0 million in cash to 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 in exchange for $3.3 million in cash, which was recorded as research and development expense in our condensed consolidated statement of operations and comprehensive loss in the third quarter of 2016. We exercised this option in June 2018. The amended and restated license agreement also provides for various milestone and royalty payments to QIMR Berghofer based on future product sales, if any.

Under the terms of the amended and restated 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 next-generation CAR T programs from MSK in May 2018 and from Moffitt Cancer Center in August 2018 and agreed to collaborate in connection with each of these licenses.

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 June 30, 2019 and December 31, 2018, there were no outstanding obligations for milestones and royalties under our license and collaboration agreements.

Cognate Agreement - In August 2015, Atara entered into a Development and Manufacturing Services Agreement (the "Manufacturing Agreement") with Cognate Bioservices, Inc. ("Cognate"). The Manufacturing Agreement was amended in December 2017 to provide for additional rights for Atara in relation to the conduct of the services and amended again in May 2018 to modify certain financial provisions with respect to manufacturing services. Pursuant to the Manufacturing Agreement, Cognate provides process development and manufacturing services for certain Atara product candidates.

7. Leases

We lease our corporate headquarters in South San Francisco, California under a non-cancellable lease agreement that expires in April 2021. In connection with the lease, we are required to maintain a letter of credit in the amount of $0.2 million to the landlord, which expires and is renewed every 12 months, and is classified as restricted cash in our condensed consolidated balance sheet. In November 2018, we entered into a lease agreement for additional office space in Thousand Oaks, California that expires in February 2026. Additionally, we entered into a new lease for our office and lab space in Aurora, Colorado, effective May 2019, that expires in April 2024.

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 the lease commenced on February 15, 2018, upon the substantial completion of landlord's work as defined under the agreement. The contractual obligations during the initial term are $16.4 million in aggregate. We have the option to extend the lease for two additional periods of ten and nine years, respectively, after the initial term. In connection with the lease, we were required to issue a letter of credit in the amount of $1.2 million to the landlord, which was recorded as long-term restricted cash in our condensed consolidated balance sheet.

Based on the terms of the lease agreement and on our involvement in certain aspects of the construction, we were deemed the owner of the building during the construction period in accordance with U.S. GAAP in effect prior to January 1, 2019. Under this build-to-suit lease arrangement, we recognized construction in progress based on all construction costs incurred by both us and the landlord. We also recognized a financing obligation equal to all costs funded by the landlord.

Due to completion of the construction by the landlord and not having met the criteria for sale-lease back accounting, we transferred the $10.3 million of landlord's construction costs previously capitalized as construction in progress to a build-to-suit asset, and have recognized a corresponding long-term financing obligation for the same amount in long-term liabilities in our condensed consolidated balance sheets. In addition, we recorded $0.3 million of capitalized interest during the construction period through December 31, 2018. A portion of the monthly lease payment was allocated to land rent and recorded as an operating lease expense and the non-interest portion of the amortized lease payments to the landlord related to rent of the building was applied to the lease financing liability.

Future minimum payments under our operating, finance and capital leases as of December 31, 2018 were as follows:

Years Ending December 31,	Operating Leases	Finance Leases	Capital Leases
		(in thousands)	
2019	$ 1,107	$ 934	$ 540
2020	1,666	962	234
2021	1,555	991	29
2022	1,337	1,020	—
2023	1,375	1,051	—
Thereafter	3,122	11,458	—
Total minimum payments	$ 10,162	$ 16,416	$ 803
Less: amount representing interest			65
Present value of capital lease obligations			738
Less: current portion			490
Capital lease obligation, net of current portion			$ 248

The maturities of lease liabilities under our operating and finance leases as of June 30, 2019 were as follows:

Periods Ending December 31,	Operating Leases	Finance Leases
	(in thousands)	
Remaining 2019	$ 1,248	$ 272
2020	2,867	236
2021	2,740	30
2022	2,611	—
2023	2,685	—
Thereafter	14,477	—
Total lease payments	$ 26,628	$ 538
Less: amount representing interest	(10,748)	(35)
Present value of lease liabilities	$ 15,880	$ 503
Balance as of June 30, 2019		
Other current liabilities	$ 961	$ 362
Operating lease liabilities	14,919	—
Other long-term liabilities	—	141
Total	$ 15,880	$ 503

The components of lease cost were as follows:

	June 30, 2019	
	Three Months Ended	Six Months Ended
	(in thousands)	
Operating lease cost:		
Operating lease cost	$ 649	$ 1,374
Short-term lease cost	200	395
Total operating lease cost	$ 849	$ 1,769
Finance lease cost:		
Amortization expense	$ 84	$ 167
Interest on lease liabilities	14	31
Total finance lease cost	$ 98	$ 198

Rent expense under operating leases for the three and six months ended June 30, 2018 was $0.5 million and $1.0 million respectively.

Other information related to leases was as follows:

	Six Months Ended June 30, 2019 (in thousands, except lease term and discount rate)
Supplemental Cash Flows Information	
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows for operating leases	$ 1,098
Operating cash flows for finance leases	31
Financing cash flows for finance leases	235
Operating lease assets obtained in exchange for lease obligations:	$ 838
Weighted Average Remaining Lease Term	
Operating Leases	10.7 years
Finance Leases	0.9 years
Weighted Average Discount Rate	
Operating leases	10.4 %
Finance leases	9.5 %

Asset Retirement Obligation

The Company's Asset Retirement Obligation ("ARO") consists of a contractual requirement to remove the tenant improvements at our manufacturing facility in Thousand Oaks, California and restore the facility to a condition specified in the lease agreement. The Company records an estimate of the fair value of its ARO in long-term liabilities in the period incurred. The fair value of the ARO is also capitalized as construction in progress. The fair value of our ARO was estimated by discounting projected cash flows over the estimated life of the related assets using our credit adjusted risk-free rate.

The following table presents the activity for our ARO liabilities:

	ARO Liability (in thousands)
Balance as of December 31, 2018	$ 717
Accretion expense	35
Balance as of June 30, 2019	$ 752

8. 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 organizationsfor 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 June 30, 2019 and December 31, 2018, there were no amounts accrued related to contract termination charges.

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 June 30, 2019 and December 31, 2018.

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.

9. 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 June 30, 2019 and December 31, 2018.

ATM Facility

In February 2019, we entered into a sales agreement (the "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 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 ATM Facility.

During the three and six months ended June 30, 2019, we sold an aggregate of 359,234 shares of common stock under the ATM Facility, at an average price of $22.18 per share, for gross proceeds of $8.0 million and net proceeds of $7.6 million, after deducting commissions and other offering expenses payable by us. As of June 30, 2019, $92.0 million of common stock remained available to be sold under this facility, subject to certain conditions as specified in the agreement and the expiration of the 60-day lock-up period in relation to the underwritten public offering described in Note 10.

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 and typically require settlement by the earlier of seven to ten years from the date of grant or the service termination (or, for RSUs granted prior to February 2014, two years following the service termination date). 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 June 30, 2019, a total of 12,135,316 shares of common stock were reserved for issuance under the 2014 EIP, of which 4,241,491 shares were available for future grant and 7,893,825 shares were subject to outstanding options and RSUs.

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. As of June 30, 2019, 1,223,621 shares of common stock were reserved for issuance under the Inducement Plan, of which 404,172 shares were available for future grant and 819,449 shares were subject to outstanding options and RSUs.

Restricted Stock Units

The fair value of RSUs is determined as the closing stock price on the date of grant. The weighted average grant date fair value of RSUs granted during the six months ended June 30, 2019 and 2018 was $35.17 and $36.69, respectively. As of June 30, 2019, there was $44.6 million of unrecognized stock-based compensation expense related to RSUs that is expected to be recognized over a weighted average period of 2.9 years. The aggregate intrinsic value of the RSUs outstanding as of June 30, 2019 was $30.8 million.

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, 2018	1,405,460	$ 26.94
Granted	998,567	$ 35.17
Forfeited	(346,327)	$ 29.37
Vested	(526,489)	$ 23.69
Unvested as of June 30, 2019	1,531,211	$ 32.87
Vested and unreleased	—	
Outstanding as of June 30, 2019	1,531,211	$ 32.87

Under our RSU net settlement procedures, for most of our employees, we withhold shares at settlement to cover the minimum payroll withholding tax obligations. During the six months ended June 30, 2019, we settled 528,589 shares underlying RSUs, of which 482,714 shares underlying RSUs were net settled by withholding 210,865 shares. The value of the RSUs withheld was $6.7 million, based on the closing price of our common stock on the settlement date. During the six months ended June 30, 2018, we settled 380,034 shares underlying RSUs, of which 233,836 shares underlying RSUs were net settled by withholding 87,954 shares. The value of the RSUs withheld was $3.4 million, based on the closing price of our common stock on the settlement date. The value of RSUs withheld in each period was remitted to the appropriate taxing authorities and has been reflected as a financing activity in our condensed consolidated statements of cash flows.

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, 2018	6,276,999	$ 28.15		
Granted	1,750,825	32.47		
Exercised	(181,664)	18.13		
Forfeited or expired	(554,431)	33.29		
Outstanding as of June 30, 2019	7,291,729	$ 29.04	5.5	$ 8,693
Vested and expected to vest as of June 30, 2019	7,291,729	$ 29.04	5.5	$ 8,693
Exercisable as of June 30, 2019	2,972,192	$ 24.40	3.5	$ 5,697

Aggregate intrinsic value represents the difference between the closing stock price of our common stock on June 30, 2019 and the exercise price of outstanding, in-the-money options. As of June 30, 2019, there was $82.9 million of unrecognized stock-based compensation expense related to stock options that is expected to be recognized over a weighted average period of 2.9 years.

Options for 181,664 and 622,982 shares of our common stock were exercised during the six months ended June 30, 2019 and 2018, with an intrinsic value of $3.3 million and $11.3 million, respectively. As we believe it is more likely than not that no stock option related tax benefits will be realized, we do not record any net tax benefits related to exercised options.

The fair value of each option issued was estimated at the date of grant using the Black-Scholes valuation model. The following table summarizes the weighted-average assumptions used as inputs to the Black-Scholes model, and resulting weighted-average grant date fair values of stock options granted to employees during the periods indicated:

	Six months ended June 30, 2019	Six months ended June 30, 2018
Assumptions:		
Expected term (years)	5.9	4.6
Expected volatility	77.0 %	73.5 %
Risk-free interest rate	2.3 %	2.6 %
Expected dividend yield	0.0 %	0.0 %
Fair Value:		
Weighted-average estimated grant date fair value per share	$ 21.82	$ 22.79
Options granted	1,750,825	1,578,750
Total estimated grant date fair value	$ 38,203,000	$ 35,980,000

Employee Stock Purchase Plan

Our 2014 Employee Stock Purchase Plan ("2014 ESPP") allows eligible employees to purchase our common stock at85% of the lower of its fair market value at(i) the beginning of a 12-month offering period, or (ii) at the end of one of the two related 6-month purchase periods. No participant in the 2014 ESPP may purchase shares of common stock valued at more than $25,000 per calendar year. The Company recorded $0.5 million and $0.2 million of expense related to the 2014 ESPP in the six months ended June 30, 2019 and 2018, respectively. 74,439 and 77,100 shares were purchased under the 2014 ESPP during the six months ended June 30, 2019 and 2018, respectively.

As of June 30, 2019, there was $1.4 million of unrecognized stock-based compensation expense related to the ESPP that is expected to be recognized by the end of second quarter of 2020.

The 2014 ESPP provides for annual increases in the number of shares available for issuance thereunder on the first business day of each fiscal year, beginning with 2015 and ending in 2024, equal to the lower of (i) one percent of the number of shares of our common stock outstanding as of such date, (ii)230,769 shares of our common stock, or (iii) a lesser number of shares as determined by our board of directors. As of June 30, 2019, there were 1,355,973 shares authorized under the 2014 ESPP.

Reserved Shares

The following shares of common stock were reserved for future issuance as of June 30, 2019:

	Total Shares Reserved
2014 Equity Incentive Plan	12,135,316
2018 Inducement Plan	1,223,621
2014 Employee Stock Purchase Plan	1,067,575
Options granted outside the equity plans	109,666
Total reserved shares of common stock	14,536,178

Stock-based Compensation Expense

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

	Three months ended June 30,		Six months ended June 30,	
	2019	2018	2019	2018
	(in thousands)		(in thousands)	
Research and development	$ 6,672	$ 3,384	$ 12,737	$ 6,316
General and administrative	8,529	4,614	14,733	8,697
Total stock-based compensation expense	$ 15,201	$ 7,998	$ 27,470	$ 15,013

10. Subsequent Events

In July 2019, we issued and sold 6,871,727 shares of common stock at an offering price of $15.28 per share and pre-funded warrants to purchase 2,945,026 shares of common stock at a public offering price of $15.2799 per warrant in an underwritten public offering pursuant to a shelf registration statement on Form S-3. We have granted the underwriters an option to purchase up to 1,472,512 additional shares of our common stock at an offering price of $15.28, less underwriting discounts and commissions. This option has not been exercised by the underwriters and expires 30 days from July 18, 2019. 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 in seven years from the date of issuance. The gross proceeds from this public offering were $150.0 million, resulting in aggregate net proceeds of approximately $140.6 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

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 June 30, 2019. 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 leading off-the-shelf, allogeneic T-cell immunotherapy company that isdeveloping novel treatments for patients withcancer, autoimmune and viral diseases. We have several T-cell immunotherapies in clinical development and are progressing a next-generation allogeneic chimeric antigen receptor T-cell, or CAR T, program.

Our platform consists of:

- our own scientific, clinical and regulatory expertise and know-how;
- research collaborations with leading academic institutions such as Memorial Sloan Kettering Cancer Center, or MSK, the Council of the Queensland Institute of Medical Research, or QIMR Berghofer, and H. Lee Moffitt Cancer Center and Research Institute, or Moffitt, to acquire rights to novel and proprietary technologies;
- the Atara T-cell Operations and Manufacturing facility, or ATOM, our recently constructed manufacturing facility which is capable of producing multiple types of therapies; and
- Atara MatchMe™, our proprietary, web-based, off-the-shelf delivery solution which will serve as a portal for order input, tracking, execution of our cell selection algorithm, product shipment and tracking.

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 that has been manufactured in advance 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, modified outside the body and then delivered back to the patient. We utilize a proprietary cell selection algorithm to select the appropriate set of cells for use based on a patient's unique immune profile. This matching process is designed to allow our cells to be administered without the pre-treatment that is required for some therapies and to reduce monitoring following administration.

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® (tabelecleucel), is in Phase 3 development for patients with Epstein-Barr virus, or EBV, associated post-transplant lymphoproliferative disorder, or EBV+ PTLD, who have failed rituximab or rituximab plus chemotherapy, as well as other EBV-associated hematologic malignancies and solid tumors, including nasopharyngeal carcinoma, or NPC.

Based on our discussions with the U.S. Food and Drug Administration, or FDA, we plan to initiate a tab-ce® biologics license application, or BLA, submission for patients with EBV+ PTLD in the second half of 2020. Based on our market research, we estimate there were several hundred EBV+ PTLD patients who have failed rituximab or rituximab plus chemotherapy in the U.S. in 2018.

The initiation of our BLA submission is now planned to occur prior to our submission of an EU conditional marketing authorization, or CMA, application. We remain in discussions with the European Medicines Agency, or EMA, and the outcome of these discussions will determine the timing of the tab-cel® CMA application for patients with EBV+ PTLD.

We have combined the two ongoing tab-cel® Phase 3 clinical studies (MATCH and ALLELE) into a single study (ALLELE) that now consists of a hematopoietic cell transplants, or HCT, cohort for EBV+ PTLD patients who have failed rituximab and a single solid organ transplant, or SOT, cohort for EBV+ PTLD patients who have failed rituximab with both chemotherapy and non-chemotherapy prior treatment experience. As part of the amended ALLELE protocol, we plan to conduct an interim analysis prior to initiating the BLA submission.

Our Phase 1/2 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 NPC is currently enrolling. In addition, we expect to initiate a Phase 2 multi-cohort study including patients with other EBV+ cancers in the second half of 2020. Based on our market research, we estimate the incidence during 2018 of NPC in the U.S., United Kingdom, France, Italy and Spain was collectively approximately 3,800 patients and approximately 71,000 patients in East Asia. Our study is designed to address a sub-population of the total incidence of this disease.

ATA188 and ATA190 for Multiple Sclerosis

Atara is also developing T-cell immunotherapies targeting EBV antigens believed to be important for the potential treatment of multiple sclerosis, or MS (ATA188 and ATA190). 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, or PMS, and patients are currently being enrolled in the U.S. and Australia. We presented initial safety results from this study in June 2019 and expect to present initial efficacy and additional safety results in the second half of 2019. Initial safety results as of April 8, 2019 showed that the first three ATA188 dose cohorts were well tolerated with no dose-limiting toxicities and no grade ≥3 treatment-related, treatment-emergent adverse events. A randomized, double-blind, placebo-controlled Phase 1b part of this study using the recommended Phase 2 dose, or RP2D, is planned following completion of the open-label, dose-escalation period. Further, we plan to initiate a randomized study of autologous ATA190 in PMS patients in the second half of 2019.

Next-Generation CAR T Program

Atara's pipeline also includes next-generation CAR T immunotherapies for patients with hematologic malignancies and solid tumors, autoimmune and viral diseases, including ATA2271 targeting mesothelin, which is partnered with MSK; ATA2321 for patients with acute myeloid leukemia, or AML, and ATA2431 for patients with B-cell lymphomas, which are partnered with Moffitt; and an internal allogeneic CD19 program, ATA3219, for patients with B-cell lymphomas.

In June 2019, at the American Society of Clinical Oncology, or ASCO, Annual Meeting, our collaborators at MSK presented Phase 1 clinical results demonstrating that their regionally-delivered mesothelin-targeted, autologous CAR T cells were well tolerated and showed encouraging anti-tumor activity in combination with pembrolizumab, a PD-1 checkpoint inhibitor. The results further support our planned development of a next-generation, mesothelin-targeted CAR T immunotherapy using MSK's novel 1XX CAR signaling domain and PD-1 dominant negative receptor, or DNR, checkpoint inhibition technologies for patients with mesothelin-associated solid tumors. We have prioritized our mesothelin-targeted next-generation CAR T program, with an IND planned for autologous ATA2271 in advanced mesothelioma in 2020.

Additional Pipeline

In addition to the core programs described above, we also have a diverse pipeline of other programs including ATA621 directed against the BK and JC viruses, ATA368 for patients with human papillomavirus, or HPV, associated cancers and ATA520 for patients with Wilms Tumor 1, or WT1, associated cancers.

Manufacturing

In June 2018, we opened our dedicated and expandable Atara T-cell Operations and Manufacturing facility, or ATOM, in Thousand Oaks, California. ATOM has the flexibility to produce multiple T-cell and CAR T immunotherapies and integrates research and process science to enable rapid development. The research and development and process and analytical development labs at ATOM are currently supporting preclinical development activities. ATOM is designed to global regulatory standards, and the required facility commissioning and qualification activities to support clinical operations are complete. Commercial production qualification activities for ATOM are nearing completion and, together with our contracted manufacturing partner, are aligned with our planned commercial strategy.

In addition to ATOM, we also work with Cognate Bioservices, Inc., or Cognate, pursuant to a Development and Manufacturing Services Agreement, or Manufacturing Agreement, that we entered into in August 2015 and which was amended in December 2017 and May 2018. Pursuant to the Manufacturing Agreement, Cognate provides process development and manufacturing services for certain of our product candidates.

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 $140.6 million and $92.3 million for the six months ended June 30, 2019 and 2018, respectively. As of June 30, 2019, we had an accumulated deficit of $667.6 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 June 30, 2019, our cash, cash equivalents and short-term investments totaled $190.1 million, which we intend to use to fund our operations. In July 2019, we completed an underwritten public offering of shares of common stock and pre-funded warrants and received aggregate net proceeds of approximately $140.6 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 an allocation of facilities, information technology and overhead expenses. Research and development costs are expensed as incurred.

We plan to increase our research and development expenses as we continue 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 studies oftab-cel® for the treatment of patients withEBV+ PTLD after HCT and SOT who have failed rituximab;
- process development, testing and manufacturing of drug supply to support clinical studies and IND-enabling studies;
- continuing to develop product candidates based on our next-generation CAR T programs;
- continuing development of ATA190 and ATA188 in progressive MS;
- continuing to develop our product candidates in additional indications, including tab-cel® for NPC and 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;
- future clinical study results;
- uncertainties in clinical study enrollment rates or discontinuation rates of patients;
- 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; 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; outside professional service costs, including legal, patent, human resources, audit and accounting services; other outside services and consulting costs, including those related to pre-commercial activities; and allocated information technology and facilities costs. We anticipate that our general and administrative expenses will continue to increase in the future as we increase our headcount to support our continued research and development and the potential commercialization of one or more of our product candidates.

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. 2016-02,*Leases* (Topic 842), effective January 1, 2019 to our critical accounting policies and significant judgments and estimates, as disclosed in Note 2 to our condensed consolidated financial statements, there have been no significant changes during the six months ended June 30, 2019 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, 2018 filed with the SEC on February 26, 2019.

Results of Operations

Comparison of the Three and Six Months Ended June 30, 2019 and 2018

Research and development expenses

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

	Three months ended June 30,		Increase	Six months ended June 30,		Increase
	2019	2018	(Decrease)	2019	2018	(Decrease)
	(in thousands)			(in thousands)		
Tab-cel® expenses	$ 11,252	$ 8,089	$ 3,163	$ 22,891	$ 17,134	$ 5,757
ATA188, ATA190 and other program expenses	9,102	6,855	2,247	15,208	11,179	4,029
Employee and overhead expenses	31,897	18,443	13,454	62,820	33,534	29,286
Total research and development expenses	$ 52,251	$ 33,387	$ 18,864	$ 100,919	$ 61,847	$ 39,072

Tab-cel® expenses were $11.3 million and $22.9 million in the three and six-month periods ended June 30, 2019, respectively, as compared to $8.1 million and $17.1 million in the comparative 2018 periods. The increases in 2019 were primarily due to higher clinical study, manufacturing and outside service costs related to the two Phase 3 clinical studies of tab-cel® in patients with EBV+ PTLD who have failed rituximab, which were initiated in December 2017 and the Phase 2 NPC study that was initiated in the fourth quarter of 2018. We anticipate that tab-cel® expenses will continue to increase in the second half of 2019, as compared to the six months ended June 30, 2019, due to increased clinical trial and manufacturing activities.

ATA188, ATA190 and other program expenses were $9.1 million and $15.2 million in the three and six-month periods ended June 30, 2019, respectively, as compared to $6.9 million and $11.2 million in the comparative 2018 periods. The increases in 2019 were primarily related to increased clinical study, manufacturing and other outside service costs related to the Phase 1 clinical study of ATA188 for patients with progressive MS and startup activities for ATA190 clinical program. As compared to the six months ended June 30, 2019, we anticipate that ATA188, ATA190 and other program expenses will increase for the remainder of 2019 primarily due to increased activities related to our recently licensed CAR T programs.

Employee and overhead expenses were $31.9 million and $62.8 million in the three and six-month periods ended June 30, 2019, respectively, as compared to $18.4 million and $33.5 million in the comparative 2018 periods. The increases were primarily due to higher compensation-related costs from increased headcount in support of our continuing expansion of research and development activities. For the three months ended June 30, 2019, payroll and related costs increased by $8.9 million, facility-related costs increased by $3.2 million and professional services costs increased by $1.4 million. For the six months ended June 30, 2019, payroll and related costs increased by $187 million, facility-related costs increased by $7.4 million and professional services costs increased by $3.2 million. We anticipate that employee and overhead costs will continue to increase in future periods as we continue to expand such activities.

General and administrative expenses

	Three months ended June 30,		Increase	Six months ended June 30,		Increase
	2019	2018	(Decrease)	2019	2018	(Decrease)
		(in thousands)			(in thousands)	
General and administrative expenses	$ 23,284	$ 19,236	$ 4,048	$ 42,507	$ 33,228	$ 9,279

General and administrative expenses increased to $23.3 million and $42.5 million in the three and six-month periods ended June 30, 2019, respectively, as compared to $19.2 million and $33.2 million in the comparative 2018 periods. The increases in 2019 were primarily due to increases in compensation-related costs driven by increased headcount. We expect that general and administrative expenses will continue to increase in 2019.

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.

In February 2019, we entered into a sales agreement, or the ATM Facility, with Cowen and Company, LLC, or 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 ATM Facility are deemed "at the market" offerings defined in Rule 415 under the Securities Act of 1933, as amended, or the Securities Act, 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 ATM Facility. During the six months ended June 30, 2019, we sold an aggregate of 359,234 shares of common stock under the ATM Facility, at an average price of $22.18 per share, for gross proceeds of $8.0 million and net proceeds of $7.6 million, after deducting commissions and other offering expenses payable by us. As of June 30, 2019, $92.0 million of common stock remained available to be sold under this facility, subject to certain conditions as specified in the agreement and the expiration of the 60-day lock-up period in relation to the underwritten public offering described below.

In July 2019, we completed an underwritten public offering of 6,871,727 shares of common stock at a public offering price of $15.28 per share and pre-funded warrants to purchase 2,945,026 shares of common stock at a public offering price of $15.2799 per warrant. We have granted the underwriters an option to purchase up to 1,472,512 additional shares of our common stock at an offering price of $15.28, less underwriting discounts and commissions. This option has not been exercised by the underwriters and expires 30 days from July 18, 2019. We received aggregate net proceeds of approximately $140.6 million after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

We have incurred losses and negative cash flows from operations in each year since inception. As of June 30, 2019, we had an accumulated deficit of $667.6 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 the foreseeable future. We expect that our research and development and general and administrative expenses will continue to increase and, 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 the equity capital markets to support our development efforts and operations, including by utilizing our ATM Facility. 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 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 June 30, 2019, together with the net proceeds from the underwritten public offering in July 2019, will be sufficient to fund our planned operations into 2021.

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

	June 30, 2019	December 31, 2018
	(in thousands)	
Cash and cash equivalents	$ 59,159	$ 60,698
Short-term investments	130,976	248,933
Total cash, cash equivalents and short-term investments	$ 190,135	$ 309,631

Cash Flows

Comparison of the Six Months Ended June 30, 2019 and 2018

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

	Six months ended June 30,	
	2019	2018
	(in thousands)	
Net cash (used in) provided by:		
Operating activities	$ (124,789)	$ (74,256)
Investing activities	117,849	(253,794)
Financing activities	5,401	352,030
Net (decrease) increase in cash, cash equivalents and restricted cash	$ (1,539)	$ 23,980

Operating activities

Net cash used in operating activities was $124.8 million in the 2019 period as compared to $74.3 million in the 2018 period. The increase of $50.5 million was primarily due to a $48.3 million increase in net loss and a $17.0 million increase in net operating assets, partially offset by a $12.5 million increase in stock-based compensation and a $2.3 million increase in depreciation and amortization expense.

Investing activities

Net cash provided by investing activities in the 2019 period consisted primarily of $136.9 million received from maturities and sales of available-for-sale securities, partially offset by $17.6 million used to purchase available-for-sale securities and $1.5 million in purchases of property and equipment. Net cash used in investing activities in the 2018 period consisted primarily of $357.6 million used to purchase available-for-sale securities and $27.3 million in purchases of property and equipment, partially offset by $131.1 million received from maturities and sales of available-for-sale securities.

Financing activities

Net cash provided by financing activities in the 2019 period consisted primarily of $7.6 million of net proceeds from the ATM Facility and $4.7 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. Net cash provided by financing activities in the 2018 period consisted of $293.3 million of aggregate net proceeds from the underwritten public offerings in January and March 2018, $47.6 million of net proceeds from the ATM facility and $14.9 million of net proceeds from employee stock transactions, partially offset by $3.4 million of taxes paid related to the net share settlement of restricted stock and $0.3 million on principal payments on our capital lease obligation.

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 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, together with the net proceeds from the underwritten public offering in July 2019, will be sufficient to fund our planned operations into 2021. 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.

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 and costs of our ongoing and planned clinical and preclinical studies for our product candidates;
- 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.

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. The lease expires in April 2021.

In January 2015, we entered into a non-cancellable lease agreement for office and laboratory space in Westlake Village, California. The lease expired in April 2019.

In February 2017, we entered into a lease agreement for ATOM, consisting of 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, upon the substantial completion of landlord's work as defined under the agreement. 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 8,400 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.

Aggregate future minimum commitments for our leases as of June 30, 2019 are as follows:

	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(in thousands)				
Operating lease obligations	$ 26,628	$ 1,248	$ 5,607	$ 5,296	$ 14,477
Finance lease obligations	538	272	266	—	—
Total contractual obligations	$ 27,166	$ 1,520	$ 5,873	$ 5,296	$ 14,477

The above amounts exclude potential milestone and royalty payments related to our license and collaboration agreements, as the achievement of these milestones is currently not fixed and determinable.

We may also enter into contracts 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. Payments in the table above are based on current operating forecasts, which are subject to change, and do not include any termination fees.

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 six months ended June 30, 2019, 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, 2018 filed with the SEC on February 26, 2019.

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 June 30, 2019. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of June 30, 2019 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 disclosure. 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.

Inherent Limitations on Controls and Procedures

Our management, including our Chief Executive Officer and our Chief Financial Officer (the person performing a similar function to that of the Principal Financial and Accounting Officer for this purpose), does not expect that our disclosure controls and procedures and our internal controls will prevent all error and all fraud. A control system, no matter how well designed and operated, can only provide reasonable assurances that the objectives of the control system are met. The design of a control system reflects resource constraints; the benefits of controls must be considered relative to their costs. Because there are inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been or will be detected. As these inherent limitations are known features of the financial reporting process, it is possible to design into the process safeguards to reduce, though not eliminate, these risks. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns occur because of simple error or mistake. Controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the control. The design of any system of controls is based in part upon certain assumptions about the likelihood of future events. While our disclosure controls and procedures are designed to provide reasonable assurance of achieving their objectives, there can be no assurance that any design will succeed in achieving its stated goals under all future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with the policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

We intend to review and evaluate the design and effectiveness of our disclosure controls and procedures on an ongoing basis and to improve our controls and procedures over time and to correct any deficiencies that we may discover in the future. While our Chief Executive Officer and Chief Financial Officer have concluded that, as of June 30, 2019, the design of our disclosure controls and procedures, as defined in Rule 13a-15(e) under the Exchange Act, was effective, future events affecting our business may cause us to significantly modify our disclosure controls and procedures.

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 six months ended June 30, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You 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.

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 a product candidate 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 six months ended June 30, 2019, we reported a net loss of $140.6 million and we had an accumulated deficit of $667.6 million as of June 30, 2019.

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;
- 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 or treatment guidelines, 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, together with the net proceeds from the underwritten public offering in July 2019, will be sufficient to fund our planned operations into 2021. As of June 30, 2019, we had total cash, cash equivalents and short-term investments of $190.1 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. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

We do not have any committed external source of funds. Additional funds may not be available when we need them on terms that are acceptable to us, or at all. 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 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, 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. 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 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 completing 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 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 clinical-stage product candidates include tab-cel®, ATA188 and ATA190. 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 that which 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.

In January 2019, the U.S. federal government entered a prolonged shutdown suspending services deemed non-essential, including certain activities of the FDA, and U.S. politicians have expressed interest in future similar shutdowns as a negotiating tactic. Our development and commercialization activities could be harmed or delayed by a similar shutdown of the U.S. federal government in the future, which may significantly delay the FDA's ability to timely 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 allogenic 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;
- 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 allogenic 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 and 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 approved by applicable regulatory authorities, of physicians to subscribe to the novel treatment mechanics. The FDA or other applicable regulatory authorities may ask for specific post-market requirements, and additional information informing benefits or risks of our products may emerge 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 will demonstrate adequate efficacy and safety to result in regulatory approval to market tab-cel®, ATA188 or ATA190, 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 ALLELE, an observed ORR above approximately 37% would be expected to meet the primary endpoint. 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, submit a filing on the basis of interim data from a subset of the required patients or submit a filing on the basis of the final data. A filing based on interim data would impact the required ORR.

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 of tab-cel® in the treatment of a single disease state for which we may later seek approval. 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.

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 such as ATA188 may not yield the same or better results as compared to an autologous product candidate such as ATA190. 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 our clinical studies that we 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 may announce or share with regulatory authorities interim "top line" or preliminary data from our clinical studies. Interim data from clinical studies that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Preliminary or "top line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously 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:

- 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, or 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, or 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 suitable 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;
- 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 for the same indication that we are treating;
- 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 indications 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 ability to manufacture the requisite materials for a study;
- risk that we do not have appropriately matched HLA cell lines; and
- 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 indications we are investigating.

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, ATA190 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. 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 side effects outweighing 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 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 cancers we are targeting, as well as the subset of people with these cancers 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 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. Further, new studies may change the estimated incidence or prevalence of these cancers. 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. 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.

Breakthrough Therapy Designation by the FDA 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 Breakthrough Therapy Designation, or BTD, for tab-cel® for EBV+ PTLD, 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.

Designation as a breakthrough therapy is within the discretion of the FDA. Receipt of a BTD for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under non-expedited the FDA review procedures and does not assure ultimate approval by the FDA. In addition, the FDA may later decide that the product no longer meets the conditions for qualification and rescind BTD or decide that the time period for FDA 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, or 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, or cGMP, current Good Clinical Practices, or GCP, current good tissue practices, or 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 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, or the DOJ, the Office of Inspector General of the 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. 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, and 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 earthquakes and other natural disasters, equipment failures, labor shortages, power failures, and numerous other factors.

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 at least a portion of our product candidates ourselves. Delays in commissioning and receiving regulatory approvals for our manufacturing facility could delay our development plans and thereby limit our ability to generate revenues.

In June 2018, we opened our Atara T-cell Operations and Manufacturing, or ATOM, facility in Thousand Oaks, California. The research and development and process and analytical development labs are operationally supporting preclinical development activities. The facility commissioning and qualification activities required to support ATOM production were completed in 2018. Product-specific qualification to support clinical production is complete and commercial production qualification activities are ongoing. If the appropriate regulatory approvals for the new facility are delayed, we may not be able to manufacture sufficient quantities of our drug 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 drug candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of drug 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 do not currently manufacture our product candidates in our own facilities and we rely on our CMO or our partners for the production of our product candidates and the acquisitions 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, ATA190, 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. For example, we generated and evaluated data from new material manufactured by our CMO and identified certain assays that need refinement prior to initiating the Phase 3 studies of tab-cel®. We have generated comparability data from the clinical material produced by our CMO using our refined assays and believe this data supports the demonstration of comparability, and we recently initiated the Phase 3 studies in the U.S. following discussions with FDA.

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 the addition of the ATOM facility provides us with future 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, or 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 could 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 competitive 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. 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. Third-party payors in the U.S. often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. 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.

Recently enacted 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 changes the way health care is financed by both governmental and private insurers, and significantly impacts 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 2027 unless additional Congressional action is taken. In January 2013, the American Taxpayer Relief Act of 2012, or 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.

Since its enactment, there have been 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, delaying 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 U.S. 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 2017, or the Tax Act. The Texas U.S. District Court Judge, as well as the presidential administration and the CMS, have stated that the ruling will have no immediate effect pending appeal of the decision, but the presidential administration has indicated that it plans to file a brief in support of the Texas U.S. District Court decision. In July 2019, a panel of federal judges in the U.S. Court of Appeals for the Fifth Circuit is hearing oral arguments in this case. It is unclear how this decision, subsequent appeals, 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 health care legislation, could result in significant changes to the health care 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 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. Additionally, in May 2018, the U.S. presidential administration laid out a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains 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 started the process of soliciting feedback on some of these measures and, at the same time, is immediately implementing others under its existing authority. In January 2019, the HHS Office of Inspector General proposed modifications to U.S. federal healthcare Anti-Kickback Statute safe harbors which, among other things, will affect rebates paid by manufacturers to Medicare Part D plans, the purpose of which is to further reduce the cost of drug products to consumers. 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 drug 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 is conducting a Phase 2 clinical study for Viralym-M (ALVR105), an allogeneic, multi-virus T-cell product that targets five viruses including EBV and Tessa Therapeutics Pte Ltd., or Tessa, which is conducting a Phase 1 clinical study of MABEL CTLs, an off-the-shelf, allogeneic T-cell therapy in relapsed/refractory EBV+ lymphomas.

Competition in the MS market is high with at least seventeen therapies, including three generics, approved for the treatment of relapsing-remitting multiple sclerosis, or RRMS, in the U.S. and EU. There are many competitors in the RRMS market, including major multi-national fully-integrated pharmaceutical companies and established biotechnology companies. Most recently, Mayzent® (siponimod), marketed by Novartis and Mavenclad® (cladribine), marketed by EMD Serono were approved for the treatment of relapsing forms of MS in the U.S. There are numerous development candidates in Phase 3 studies for RRMS including Novartis' anti-CD20 monoclonal antibody ofatumumab; TG Therapeutics' anti-CD20 monoclonal antibody ublituximab and J&J/Actelion's next-generation sphingosine 1-phosphate receptor (S1PR) agonist ponesimod. There are also several therapeutic candidates awaiting FDA and/or EMA regulatory approval including Biogen's diroximel fumarate (trade name - Vumerity, a next-generation oral fumarate) and Celgene's ozanimod, an S1PR1 and S1PR5 agonist.

Six therapies have been approved for the treatment of progressive MS. Ocrevus® is approved in the U.S. and EU for the treatment of primary progressive MS, or PPMS. Extavia® (marketed by Novartis) and Betaseron® (marketed by Bayer AG) are approved in the European Union for the treatment of secondary progressive MS, or SPMS. Mayzent® (siponimod), marketed by Novartis and Mavenclad® (cladribine), marketed by EMD Serono, were most recently approved for the treatment of active SPMS in the U.S. Prior to the approvals of Mayzent and Mavenclad in 2019, there was only one drug (mitoxantrone) approved to treat SPMS in the U.S., which is now generic.

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. These are MedDay's MD-1003, a concentrated form of biotin, and AB Science's masitinib, a tyrosine kinase inhibitor. Medicinova's ibudilast (MN166), a non-selective PDE inhibitor is in Phase 2 studies for primary and secondary progressive MS.

There are currently two CAR-T therapies approved in the U.S. and EU, Novartis' Kymriah (tisagenlecleucel) and Gilead/Kite's Yescarta (axicabtagene ciloleucel). However, given the explosion of innovation in this area, there are more than 100 CAR T's in development including at least 35 which are allogeneic and off-the-shelf cell therapies. Depending on the diseases that we target in the future, we may face competition from both CAR-T 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, includingEBV+ 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. This pricing premium may make it difficult for us to differentiate our products from currently approved or commonly used therapies and impede adoption of our products, 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, or biologics, and therefore they may be subject to competition sooner than anticipated.

The Biologics Price Competition and Innovation Act of 2009, or 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 June 30, 2019, we had 367 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 Our Business Generally

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, 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 will constrain 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 and civil monetary penalty laws impose criminal and civil penalties, including through civil whistleblower or qui tam actions available under the federal civil False Claims Act, 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, or 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, or 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;
- the federal physician sunshine requirements under the Affordable Care Act requires manufacturers of drugs, devices, biologics and medical supplies to report annually to CMS information related to payments and other transfers of value to physicians, other healthcare providers, and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members and applicable group purchasing organizations;
- 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 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 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. 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.

The U.S. tax reform bill passed in 2017 could adversely affect our business and financial condition.

Legislation or other changes in tax laws could lead to or increase our tax liability and adversely affect our after-tax profitability. For example, The Tax Act was enacted in the U.S. on December 22, 2017. 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. The Tax Act among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%; limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses); limitation of the deduction of net operating losses generated in tax years beginning after December 31, 2017 to 80% of taxable income, indefinite carryforward of net operating losses generated in tax years after 2018 and elimination of net operating loss carrybacks; changes in the treatment of offshore earnings regardless of whether they are repatriated; current inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations, mandatory capitalization of research and development expenses beginning in 2022; immediate deductions for certain new investments instead of deductions for depreciation expense over time; further deduction limits on executive compensation; and modifying, repealing and creating many other business deductions and credits, including the reduction in the orphan drug credit from 50% to 25% of qualifying expenditures. We completed an evaluation of the overall impact of The Tax Act on our effective tax rate and balance sheet through December 31, 2018 and have reflected the amounts in our financial statements. The Tax Act may have significant impacts in future periods and our business and financial condition could be adversely affected. The future impact of the Tax Act on holders of our common stock is also uncertain and could be adverse.

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, or 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, 2018, we reported U.S. federal and state NOLs of approximately $293.9 million and $449.8 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 newly enacted Tax Act, federal NOLs incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal NOL's is limited to 80% of current year taxable income. Not all states conform to the Tax Act and other states have varying conformity to the Tax Act.

In addition, under Section 382 of the Internal Revenue Code of 1986, as amended, or 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, 2018 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 our July 2019 financing and future 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 manmade 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.

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, 2017 through June 30, 2019, the reported sale price of our common stock has fluctuated between $11.80 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. 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. 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 health care 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.

Effective December 31, 2018, we are no longer an "emerging growth company," and the reduced reporting requirements applicable to "emerging growth companies" no longer apply, which increases our costs as a result of being a public company and places additional demands on management.

Effective December 31, 2018, we were no longer classified as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act, or JOBS Act. As such, we will incur significant additional expenses that we did not previously incur in complying with the Sarbanes-Oxley Act and rules implemented by the SEC. Because we are no longer being classified as an "emerging growth company", the cost of compliance with Section 404 has required, and will continue to require, us to incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements. Moreover, if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Furthermore, investor perceptions of our company may suffer if, in the future, material weaknesses are found, and this could cause a decline in the market price of our stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material effect on our stated operating results. If we are unable to implement these changes effectively or efficiently, it could harm our operations, financial reporting or financial results and could result in an adverse opinion on internal control from our independent registered public accounting firm.

In addition, we have previously taken advantage of the JOBS Act's reduced disclosure requirements applicable to "emerging growth companies" regarding executive compensation and exemptions from the requirements of holding advisory say-on-pay votes on executive compensation. Since we are no longer classified as an "emerging growth company," we are no longer eligible for such reduced disclosure requirements and exemptions and as such, we are required to hold a say-on-pay vote and a say-on-frequency vote at our 2019 annual meeting of stockholders. As a result, we expect that because we are no longer classified as an "emerging growth company,"we will require additional attention from management with respect to our disclosures and will incur increased costs, which could include higher legal fees, accounting fees, consultant fees and fees associated with investor relations activities, among others.

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 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. 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, or Certificate of Incorporation, and amended and restated bylaws, or 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.

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*	Executive Employment Agreement, dated May 23, 2019, by and between Pascal Touchon and Atara Biotherapeutics, Inc.	8-K	001-36548	10.1	5/28/2019	
10.2*	Form of Executive Employment Agreement.					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	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	XBRL Schema Document					X
101.CAL	XBRL Calculation Linkbase Document					X
101.LAB	XBRL Labels Linkbase Document					X
101.PRE	XBRL Presentation Linkbase Document					X
101.DEF	XBRL Definition Linkbase Document.					X
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, formatted in Inline XBRL.					X

* 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: August 8, 2019

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)

ATARA BIOTHERAPEUTICS, INC.

EXECUTIVE EMPLOYMENT AGREEMENT

for

[NAME]

This Executive Employment Agreement (this "**Agreement**"), is made and entered into as of [DATE] (the "**Effective Date**"), by and between [NAME] ("**Employee**") and Atara Biotherapeutics, Inc. (the "**Company**").

1. Employment by the Company.

1.1 Position. Employee shall serve as the Company's [Senior or Executive] Vice President, [JOB TITLE], reporting to the Company's [SUPERVISOR]. During the term of Employee's employment with the Company, Employee will devote Employee's best efforts and all of Employee's business time and attention to the business of the Company, except as permitted in Section 7 of this Agreement and excluding approved vacation periods and reasonable periods of illness or other incapacities permitted by the Company's general employment policies. Employee further agrees not to usurp, for Employee's own personal benefit or gain, any opportunities in the Company's line of business. Employee shall be expected to work on a full-time basis [and travel as part of his/her position]. Employee's anticipated start date will be [DATE] (the "**Start Date**").

1.2 Duties and Location. Employee shall perform such duties as are customarily associated with the position of [JOB TITLE], and such other duties as are assigned to Employee by the Company. Employee's primary office location shall be the Company's [LOCATION] office. Subject to the terms of this Agreement and applicable law, the Company reserves the right to (i) reasonably require Employee to perform Employee's duties at places other than Employee's primary office location from time to time and to require reasonable business travel, and (ii) modify Employee's job title, reporting line and duties as it deems necessary and appropriate in light of the Company's needs and interests from time to time.

1.3 Policies and Procedures. The employment relationship between the parties shall be governed by the general employment policies and practices of the Company, including the Employee Handbook, as well as by all other rules and policies applicable to the Company's professional employees, except that when the terms of this Agreement differ from or are in conflict with the Company's general employment policies or practices, this Agreement shall control.

1.4 At-Will Employment. Employee's employment relationship with the Company is at-will. Either the Company or Employee shall have the right to terminate the employment relationship at any time, with or without Cause (as defined below) or advance notice. Should a Company policy exist now or in the future which contradicts this at-will provision, this at-will provision controls the relationship between Employee and the Company. The at-will nature of Employee's employment may only be changed in an express written agreement signed by Employee and a duly authorized officer of the Company. Nothing in this Agreement is intended to modify the at-will employment relationship between the Company and Employee.

2. Compensation.

2.1 Base Salary. For services to be rendered hereunder, Employee shall be paid a base annual salary at the rate of $[_____] (the "**Base Salary**"), less all required and applicable standard payroll deductions and withholdings for federal and state taxes and for any authorized voluntary deductions and payable in accordance with the Company's regular payroll schedule.

2.2 Annual Discretionary Bonus. Employee will be eligible for an annual discretionary target bonus (the "**Annual Bonus**") of [##] ([##]%)] of Employee's then current Base Salary (the "**Target Bonus Amount**"). Whether Employee receives an Annual Bonus for any given year, and the amount of any such Annual Bonus, will be determined in the good faith discretion of the board of directors of the Company (the "**Board**") (or the Compensation Committee thereof), based upon the Company's and Employee's achievement of objectives and milestones to be determined on an annual basis by the Board (or Compensation Committee thereof). No Annual Bonus is guaranteed and, in addition to the other conditions for earning such compensation, Employee must remain an employee in good standing of the Company on the date the Annual Bonus is paid in order to be eligible for and earn any Annual Bonus. For the calendar year of Employee's Start Date, Employee's eligibility for the Annual Bonus, and the amount thereof, will be prorated based on Employee's Start Date.

2.3 [Signing/Retention/Relocation Bonus.][1]

3. Standard Company Benefits. Employee shall, in accordance with Company policy and the terms and conditions of the applicable Company benefit plan documents, be eligible to participate in the benefit and fringe benefit programs provided by the Company to its executive officers and other employees from time to time. Employee shall also be entitled to paid sick leave, paid time off, and holidays as outlined in the Company's employment policies and as otherwise required by applicable law. Any such benefits shall be subject to the terms and conditions of the governing benefit plans and policies, as well as the Company's policies and may be changed by the Company in its discretion.

4. Expenses. The Company will reimburse Employee for reasonable travel, entertainment or other expenses incurred by Employee in furtherance or in connection with the performance of Employee's duties hereunder, in accordance with applicable law and the Company's expense reimbursement policy as in effect from time to time.

5. Equity.

5.1 Options. The Company will recommend to its Compensation Committee of the Board that Employee be granted an option to purchase [##] shares of the Company's Common Stock ("**Option**"). Grant of the Option is subject to the approval of the Compensation Committee. If granted, the Option shall vest over four years of Employee's continuous service with the Company, with twenty-five percent (25%) of the shares subject to the Option grant becoming vested on the first year anniversary of the Start Date, and the remaining shares becoming vested in equal monthly installments over the following thirty-six (36) months of Employee's continuous service. The exercise price of the Option, as well as all other matters related to the Option, will be governed by and subject to the terms and conditions set forth in the Company's 2014 Equity Incentive Plan or 2018 Inducement Plan, and the stock option agreement Employee will be required to electronically accept.

5.2 Restricted Stock Units. The Company will recommend to its Compensation Committee of the Board that Employee be granted [##] restricted stock units ("**RSUs**"). Grant of the RSUs is subject to the approval of the Compensation Committee. If granted, the RSUs shall vest over four years of Employee's continuous service with the Company, with twenty-five percent (25%) of the RSUs becoming vested on the first year anniversary of the Start Date, and the remaining RSUs becoming vested in equal annual installments over the following three anniversaries of the Start Date of Employee's continuous service. The RSUs will be governed by and subject to the terms and conditions set forth in the Company's 2014 Equity Incentive Plan or 2018 Inducement Plan and the applicable grant documents.

6. Proprietary Information Obligations.

[1] Certain executive officers may receive retention, sign-on, relocation or other similar cash bonuses.

6.1 Proprietary Information Agreement. As a condition of employment, Employee shall execute and abide by the Company's standard form of Proprietary Information and Inventions Assignment Agreement (the "**Proprietary Agreement**").

6.2 Third-Party Agreements and Information. Employee represents and warrants that Employee's employment by the Company does not conflict with any prior employment or consulting agreement or other agreement with any third party, and that Employee will perform Employee's duties to the Company without violating any such agreement. Employee represents and warrants that Employee does not possess confidential information arising out of prior employment, consulting, or other third party relationships, that would be used in connection with Employee's employment by the Company, except as expressly authorized by that third party. During Employee's employment by the Company, Employee will use in the performance of Employee's duties only information that is generally known and used by persons with training and experience comparable to Employee's own, common knowledge in the industry, otherwise legally in the public domain, or obtained or developed by the Company or by Employee in the course of Employee's work for the Company. In addition, Employee represents that Employee has disclosed to the Company in writing any agreement Employee may have with any third party (e.g., a former employer) which may limit Employee's ability to perform Employee's duties to the Company, or which could present a conflict of interest with the Company, including but not limited to disclosure (and a copy) of any contractual restrictions on solicitations or competitive activities.

7. Outside Activities and Non-Competition During Employment

7.1 Outside Activities. Throughout Employee's employment with the Company, Employee may engage in civic and not-for-profit activities so long as such activities do not interfere with the performance of Employee's duties hereunder or present a conflict of interest with the Company or its affiliates. Subject to the restrictions set forth herein, and only with prior written disclosure to and written consent of the Company (including in the discretion of the Company, the Board), Employee may engage in other types of business or public activities. The Company may rescind such consent, if the Company determines, in its sole discretion, that such activities compromise or threaten to compromise the Company's or its affiliates' business interests or conflict with Employee's duties to the Company or its affiliates.

7.2 Non-Competition During Employment. Throughout Employee's employment with the Company, Employee will not, without prior written disclosure to and written consent of the Company (including in the discretion of the Company, the Board), directly or indirectly serve as an officer, director, stockholder, employee, partner, proprietor, investor, joint ventures, associate, representative or consultant of any person or entity engaged in, or planning or preparing to engage in, business activity competitive with any line of business engaged in (or planned to be engaged in) by the Company or its affiliates; provided, however, that Employee may purchase or otherwise acquire up to (but not more than) one percent (1%) of any class of securities of any enterprise (without participating in the activities of such enterprise) if such securities are listed on any national or regional securities exchange. In addition, Employee will be subject to certain restrictions (including restrictions continuing after Employee's employment ends) outlined in the terms of the Proprietary Agreement.

8. Termination of Employment; Severance and Change in Control Benefits.

8.1 Termination Without Cause or Resignation for Good Reason Unrelated to Change in Control. In the event Employee's employment with the Company is terminated by the Company without Cause (as defined below), and other than as a result of Employee's death or disability, or Employee resigns for Good Reason, in either case, at any time except during the Change in Control Period (as defined below), then provided such termination constitutes a "separation from service" (as defined under Treasury Regulation Section 1.409A-1(h), without regard to any alternative definition thereunder, a "**Separation from Service**"), and provided that Employee satisfies the Release Requirement in Section 9 below, and remains in compliance with the terms of this Agreement and the Proprietary Agreement, the Company shall provide Employee with the following "**Severance Benefits***"*:

8.1.1 Severance Payments. Severance pay in the form of continuation of Employee's final Base Salary for a period of [##] ([##]) months following termination, subject to required and voluntarily authorized payroll deductions and federal and state tax withholdings (the "**Severance Payments**"). Subject to Section 10 below, the Severance Payments shall be made on the Company's regular payroll schedule in effect

following Employee's Separation from Service date; provided, however that any such payments that are otherwise scheduled to be made prior to the Release Effective Date (as defined below) shall instead accrue and be made on the first regular payroll date following the Release Effective Date. For such purposes, Employee's final Base Salary will be calculated prior to giving effect to any reduction in Base Salary that would give rise to Employee's right to resign for Good Reason.

8.1.2 Health Care Continuation Coverage Payments.

(i)COBRA Premiums. If Employee timely elects continued coverage under COBRA, the Company will pay Employee's COBRA premiums to continue Employee's coverage (including coverage for Employee's eligible dependents, if applicable) ("**COBRA Premiums**") through the period starting on the Separation from Service date and ending [##] ([##]) months after the Separation from Service date (the "**COBRA Premium Period**"); provided, however, that the Company's provision of such COBRA Premium benefits will immediately cease if during the COBRA Premium Period Employee becomes eligible for group health insurance coverage through a new employer or Employee ceases to be eligible for COBRA continuation coverage for any reason, including plan termination. In the event Employee becomes covered under another employer's group health plan or otherwise ceases to be eligible for COBRA during the COBRA Premium Period, Employee must immediately notify the Company, in writing, of such event.

(ii) Special Cash Payments in Lieu of COBRA Premiums. Notwithstanding the foregoing, if (a) as of the date of Employee's termination of employment Employee is not a participant in a Company group health plan under which Employee would otherwise be entitled to continued coverage under COBRA or (b) the Company determines, in its sole discretion, that it cannot pay the COBRA Premiums without potentially incurring financial costs or penalties under applicable law (including, without limitation, Section 2716 of the Public Health Service Act), regardless of whether Employee or Employee's dependents elect or are eligible for COBRA coverage, the Company instead shall pay to Employee, on the first day of each calendar month following the Separation from Service date, a fully taxable cash payment equal to the applicable COBRA premiums for that month (including the amount of COBRA premiums for Employee's eligible dependents), subject to applicable federal and state tax withholdings and required or voluntarily authorized deductions (such amount, the "**Special Cash Payment**"), for the remainder of the COBRA Premium Period. Employee may, but is not obligated to, use such Special Cash Payments toward the cost of COBRA premiums or toward premium costs under an individual health plan.

8.2 Termination Without Cause or Resignation for Good Reason During Change in Control Period. In the event Employee's employment with the Company is terminated by the Company without Cause (and other than as a result of Employee's death or disability) at any time during the Change in Control Period, or Employee resigns for Good Reason at any time during the Change in Control Period, *in lieu of* (*and not additional to*) the Severance Benefits described in Section 8.1, and provided that Employee satisfies the Release Requirement in Section 9 below and remains in compliance with the terms of this Agreement and the Proprietary Agreement, the Company shall instead provide Employee with the following "**CIC Severance Benefits**". For the avoidance of doubt: (i) in no event will Employee be entitled to severance benefits under Section 8.1 and this Section 8.2, and (ii) if the Company has commenced providing Severance Benefits to Employee under Section 8.1 prior to the date that Employee becomes eligible to receive CIC Severance Benefits under this Section 8.2, the Severance Benefits previously provided to Employee under Section 8.1 of this Agreement shall reduce the CIC Severance Benefits provided under this Section 8.2:

8.2.1 CIC Severance Payment. Severance pay in the form of a lump sum payment in an amount equal to (i) [##] ([##]) months of Employee's final Base Salary, payable within sixty (60) days following the Separation from Service date and subject to required and voluntarily authorized payroll deductions and federal and state tax withholdings. For such purposes, Employee's final Base Salary will be calculated prior to giving effect to any reduction in Base Salary that would give rise to Employee's right to resign for Good Reason

8.2.2 CIC Health Care Continuation Coverage Payments.

(i) COBRA Premiums. If Employee timely elects continued coverage under COBRA, the Company will pay Employee's COBRA premiums to continue Employee's coverage (including coverage for Employee's eligible dependents, if applicable) ("**CIC COBRA Premiums**") through the period starting on the Separation from Service date and ending [##] ([##]) months after the Separation from Service date (the "**CIC COBRA Premium Period**"); provided, however, that the Company's provision of such CIC COBRA Premium benefits will immediately cease if during the CIC COBRA Premium Period, Employee becomes eligible for group health insurance coverage through a new employer or Employee ceases to be eligible for COBRA continuation coverage for any reason, including plan termination. In the event Employee becomes covered under another employer's group health plan or otherwise ceases to be eligible for COBRA during the CIC COBRA Premium Period, Employee must immediately notify the Company, in writing, of such event.

(ii) Special Cash Payments in Lieu of CIC COBRA Premiums. Notwithstanding the foregoing, if the Company determines, in its sole discretion, that it cannot pay the CIC COBRA Premiums without potentially incurring financial costs or penalties under applicable law (including, without limitation, Section 2716 of the Public Health Service Act), regardless of whether Employee or Employee's dependents elect or are eligible for COBRA coverage, the Company instead shall pay to Employee, on the first day of each calendar month following the Separation from Service date, a fully taxable cash payment equal to the applicable COBRA premiums for that month (including the amount of COBRA premiums for Employee's eligible dependents), subject to applicable federal and state tax withholdings (such amount, the "**Special CIC Cash Payment**"), for the remainder of the CIC COBRA Premium Period. Employee may, but is not obligated to, use such Special CIC Cash Payments toward the cost of COBRA premiums.

8.2.3 Bonus. Employee shall also receive an amount equal to the Target Bonus Amount, payable in a lump sum within sixty (60) days following the termination date and subject to required and voluntarily authorized payroll deductions and federal and state tax withholdings; provided, however that, if the period for satisfaction of the Release Requirement (as defined below) begins in one taxable year and ends in another taxable year, payment shall not be made until the beginning of the second taxable year. For purposes of calculating the Target Bonus Amount for purposes of the payment pursuant to this Section 8.2.3, Executive's final Base Salary will be calculated prior to giving effect to any reduction in Base Salary that would give rise to Executive's right to resign for Good Reason.

8.2.4 Equity Acceleration. Notwithstanding anything to the contrary set forth in the Company's 2014 Equity Incentive Plan or 2018 Inducement Plan, any other equity incentive plans or any award agreement, effective as of Employee's employment Separation from Service date that occurs during the Change in Control Period, the vesting and exercisability of all unvested time-based vesting equity awards then held by Employee shall accelerate such that all shares become immediately vested and exercisable, if applicable, by Employee upon such Separation from Service and shall remain exercisable, if applicable, following Employee's Separation from Service as set forth in the applicable equity award documents. With respect to any performance-based vesting equity award, such award shall continue to be governed in all respects by the terms of the applicable equity award documents.

8.3 Termination for Cause; Resignation Without Good Reason; Death or Disability. Employee will not be eligible for, or entitled to any severance benefits, including (without limitation) the Severance Benefits and CIC Severance Benefits listed in Sections 8.1 and 8.2 above, if the Company terminates Employee's employment for Cause, Employee resigns Employee's employment without Good Reason, or Employee's employment terminates due to Employee's death or disability.

9. Conditions to Receipt of Severance Benefits and CIC Severance Benefits. To be eligible for any of the Severance Benefits or CIC Severance Benefits pursuant to Sections 8.1 and 8.2 above, Employee must satisfy the following release requirement (the "**Release Requirement**"): return to the Company a signed and dated general release of all known and unknown claims in a separation agreement acceptable to the Company (the "**Release**") within the applicable deadline set forth therein, but in no event later than forty-five (45) calendar days following Employee's Separation from Service date, and permit the Release to become effective and irrevocable in accordance with its terms (such effective date of the Release, the "**Release Effective Date**"). No Severance Benefits or CIC Severance Benefits will be paid hereunder prior to the Release Effective Date. Accordingly, if Employee breaches the preceding sentence and/or refuses to sign and deliver to the Company an executed Release or signs and

delivers to the Company the Release but exercises Employee's right, if any, under applicable law to revoke the Release (or any portion thereof), then Employee will not be entitled to any severance, payment or benefit under this Agreement.

10. Section 409A. It is intended that all of the severance benefits and other payments payable under this Agreement satisfy, to the greatest extent possible, the exemptions from the application of Code Section 409A provided under Treasury Regulations 1.409A-1(b)(4), 1.409A-1(b)(5) and 1.409A-1(b)(9), and this Agreement will be construed to the greatest extent possible as consistent with those provisions, and to the extent not so exempt, this Agreement (and any definitions hereunder) will be construed in a manner that complies with Section 409A. For purposes of Code Section 409A (including, without limitation, for purposes of Treasury Regulation Section 1.409A-2(b)(2)(iii)), Employee's right to receive any installment payments under this Agreement (whether Severance Payments, CIC Severance Payments, reimbursements or otherwise) shall be treated as a right to receive a series of separate payments and, accordingly, each installment payment hereunder shall at all times be considered a separate and distinct payment. Notwithstanding any provision to the contrary in this Agreement, if Employee is deemed by the Company at the time of Employee's Separation from Service to be a "specified employee" for purposes of Code Section 409A(a)(2)(B)(i), and if any of the payments upon Separation from Service set forth herein and/or under any other agreement with the Company are deemed to be "deferred compensation", then to the extent delayed commencement of any portion of such payments is required in order to avoid a prohibited distribution under Code Section 409A(a)(2)(B)(i) and the related adverse taxation under Section 409A, such payments shall not be provided to Employee prior to the earliest of (i) the expiration of the six-month and one day period measured from the date of Employee's Separation from Service with the Company, (ii) the date of Employee's death or (iii) such earlier date as permitted under Section 409A without the imposition of adverse taxation. Upon the first business day following the expiration of such applicable Code Section 409A(a)(2)(B)(i) period, all payments deferred pursuant to this Paragraph shall be paid in a lump sum to Employee, and any remaining payments due shall be paid as otherwise provided herein or in the applicable agreement. No interest shall be due on any amounts so deferred. If the Company determines that any Severance Benefits or CIC Severance Benefits provided under this Agreement constitutes "deferred compensation" under Section 409A, for purposes of determining the schedule for payment of the severance benefits, the effective date of the Release will not be deemed to have occurred any earlier than the sixtieth (60th) date following the Separation From Service, regardless of when the Release actually becomes effective. In addition to the above, to the extent required to comply with Section 409A and the applicable regulations and guidance issued thereunder, if the applicable deadline for Employee to execute (and not revoke) the applicable Release spans two calendar years, payment of the applicable Severance Benefit or CIC Severance Benefits shall not commence until the beginning of the second calendar year. To the extent required to avoid accelerated taxation and/or tax penalties under Code Section 409A, amounts reimbursable to Employee under this Agreement shall be paid to Employee on or before the last day of the year following the year in which the expense was incurred and the amount of expenses eligible for reimbursement (and in-kind benefits provided to Employee) during any one year may not effect amounts reimbursable or provided in any subsequent year. The Company makes no representation that any or all of the payments described in this Agreement will be exempt from or comply with Code Section 409A and makes no undertaking to preclude Code Section 409A from applying to any such payment.

11. Section 280G; Limitations on Payment.

11.1 If any payment or benefit Employee will or may receive from the Company or otherwise (a "**280G Payment**") would (i) constitute a "parachute payment" within the meaning of Section 280G of the Code, and (ii) but for this sentence, be subject to the excise tax imposed by Section 4999 of the Code (the "**Excise Tax**"), then any such 280G Payment provided pursuant to this Agreement (a "**Payment**") shall be equal to the Reduced Amount. The "**Reduced Amount**" shall be either (x) the largest portion of the Payment that would result in no portion of the Payment (after reduction) being subject to the Excise Tax or (y) the largest portion, up to and including the total, of the Payment, whichever amount (i.e., the amount determined by clause (x) or by clause (y)), after taking into account all applicable federal, state and local employment taxes, income taxes, and the Excise Tax (all computed at the highest applicable marginal rate), results in Employee's receipt, on an after-tax basis, of the greater economic benefit notwithstanding that all or some portion of the Payment may be subject to the Excise Tax. If a reduction in a Payment is required pursuant to the preceding sentence and the Reduced Amount is determined pursuant to clause (x) of the preceding sentence, the reduction shall occur in the manner (the "**Reduction Method**")

that results in the greatest economic benefit for Employee. If more than one method of reduction will result in the same economic benefit, the items so reduced will be reduced pro rata (the "**Pro Rata Reduction Method**").

11.2 Notwithstanding any provision of Section 11.1 to the contrary, if the Reduction Method or the Pro Rata Reduction Method would result in any portion of the Payment being subject to taxes pursuant to Section 409A that would not otherwise be subject to taxes pursuant to Section 409A, then the Reduction Method and/or the Pro Rata Reduction Method, as the case may be, shall be modified so as to avoid the imposition of taxes pursuant to Section 409A as follows: (A) as a first priority, the modification shall preserve to the greatest extent possible, the greatest economic benefit for Employee as determined on an after-tax basis; (B) as a second priority, Payments that are contingent on future events (*e.g.*, being terminated without Cause), shall be reduced (or eliminated) before Payments that are not contingent on future events; and (C) as a third priority, Payments that are "deferred compensation" within the meaning of Section 409A shall be reduced (or eliminated) before Payments that are not deferred compensation within the meaning of Section 409A.

11.3 Unless Employee and the Company agree on an alternative accounting firm or law firm, the accounting firm engaged by the Company for general tax compliance purposes as of the day prior to the effective date of the Change in Control transaction shall perform the foregoing calculations. If the accounting firm so engaged by the Company is serving as accountant or auditor for the individual, entity or group effecting the Change in Control transaction, the Company shall appoint a nationally recognized accounting or law firm to make the determinations required by this Section 11. The Company shall bear all expenses with respect to the determinations by such accounting or law firm required to be made hereunder. The Company shall use commercially reasonable efforts to cause the accounting or law firm engaged to make the determinations hereunder to provide its calculations, together with detailed supporting documentation, to Employee and the Company within fifteen (15) calendar days after the date on which Employee's right to a 280G Payment becomes reasonably likely to occur (if requested at that time by Employee or the Company) or such other time as requested by Employee or the Company.

11.4 If Employee receives a Payment for which the Reduced Amount was determined pursuant to clause (x) of Section 11.1 and the Internal Revenue Service determines thereafter that some portion of the Payment is subject to the Excise Tax, Employee agrees to promptly return to the Company a sufficient amount of the Payment (after reduction pursuant to clause (x) of Section 11.1) so that no portion of the remaining Payment is subject to the Excise Tax. For the avoidance of doubt, if the Reduced Amount was determined pursuant to clause (y) of Section 11.1, Employee shall have no obligation to return any portion of the Payment pursuant to the preceding sentence.

12. Definitions.

12.1 Cause. For purposes of this Agreement, "**Cause** " means the occurrence of any one or more of the following: (i) Employee's conviction of or plea of guilty or *nolo contendere* to any felony or a crime of moral turpitude or dishonesty; (ii) Employee's willful and continued failure or refusal to follow lawful and reasonable instructions of the Company or lawful and reasonable policies and regulations of the Company or its affiliates; (iii) Employee's willful and continued failure to faithfully and diligently perform the assigned duties of Employee's employment with the Company or its affiliates; (iv) unprofessional, unethical, immoral or fraudulent conduct by Employee; (v) conduct by Employee that materially discredits the Company or any affiliate or is materially detrimental to the reputation, character and standing of the Company or any affiliate; or (vi) Employee's material breach of this Agreement, the Proprietary Agreement, or any applicable Company policies . An event described in Section 12.1(ii) through Section 12.1(vi) herein shall not be treated as "Cause" until after Employee has been given written notice of such event, failure , conduct or breach and Employee fails to cure such event, failure, conduct or breach within 30 calendar days from such written notice; provided, however, that such 30-day cure period shall not be required if the event, failure, conduct or breach is determined by the Company to be incapable of being cured.

12.2 Change in Control. For purposes of this Agreement, "**Change in Control**" shall have the meaning described in the Company's 2014 Equity Incentive Plan.

12.3 Change in Control Period. For purposes of this Agreement, "**Change in Control Period**" means the time period commencing [##] ([##]) months before the effective date of a Change in Control and ending on the date that is [##] ([##]) months after the effective date of a Change in Control.

12.4 Good Reason. For purposes of this Agreement, Employee shall have "**Good Reason**" for resignation from employment with the Company if any of the following actions are taken by the Company without Employee's prior written consent: (i) a material reduction in Employee's Base Salary, unless pursuant to a salary reduction program applicable generally to the Company's senior executives; (ii) a material reduction in Employee's duties (including responsibilities and/or authorities), provided, however, that a change in job position (including a change in title) or reporting line shall not be deemed a "material reduction" in and of itself unless Employee's new duties are materially reduced from the prior duties; or (iii) relocation of Employee's principal place of employment to a place that increases Employee's one-way commute by more than fifty (50) miles as compared to Employee's then-current principal place of employment immediately prior to such relocation. In order for Employee to resign for Good Reason, each of the following requirements must be met: (i) Employee must provide written notice to the Company's Chief Executive Officer within thirty (30) calendar days after the first occurrence of the event giving rise to Good Reason setting forth the basis for Employee's resignation, (ii) Employee must allow the Company at least thirty (30) calendar days from receipt of such written notice to cure such event, (iii) such event is not reasonably cured by the Company within such 30 calendar day period (the "**Cure Period**"), and (iv) Employee must resign in writing from all positions Employee then holds with the Company not later than 30 calendar days after the expiration of the Cure Period.

13. Dispute Resolution/Agreement to Arbitrate Claims. To ensure the rapid and economical resolution of disputes that may arise in connection with Employee's employment with the Company, Employee and the Company agree that any and all disputes, claims, or causes of action, in law or equity, including but not limited to statutory claims, arising from or relating to the enforcement, breach, performance, or interpretation of this Agreement, Employee's employment with the Company, or the termination of Employee's employment from the Company, will be resolved pursuant to the Federal Arbitration Act, 9 U.S.C. §1, *et seq.* and to the fullest extent permitted by law, by final, binding and confidential arbitration. Except as provided below, the Company and Employee agree that confidential arbitration is the exclusive, final and biding method for resolving all such claims.

13.1. Claims Covered By this Agreement. Disputes that are subject to arbitration under this Agreement include, but are not limited to, claims for wages or other compensation due, including claims for overtime; meal or rest break claims; claims for breach of any contract or covenant (express or implied); tort claims, including, but not limited to claims for defamation, intentional infliction of emotional distress, invasion of privacy, and all negligence-based claims; personal injury claims; claims for discrimination, harassment and/or retaliation in employment including, but no limited to claims under the California Fair Employment and Housing Act, the California Labor Code, claims arising under Title VII of the Civil Rights Act of 1964, the Fair Labor Standards Act, the Equal Pay Act, the Employee Retirement Income Security Act, the California Family Rights Act of 1964, the Family and Medical Leave Act, the Americans with Disabilities Act, the Age Discrimination in Employment Act, the Older Worker Benefit Protection Act, the Sarbanes-Oxley Act, all as they may have been amended from time to time, claims for misclassification, and claims for violation of common law or any other federal, state, or local laws relating to employment or separation from employment or benefits associated with employment or separation for employment.

13.2. Claims Not Covered By this Agreement. Claims for workers' compensation, unemployment insurance, claims for injunctive relief, and claims under California Private Attorneys General Act of 2004, as amended, are not covered by this Agreement. Nothing in this Agreement is intended to prevent Employee from filing an administrative claim with the Equal Employment Opportunity Commission or the California Department of Fair Employment and Housing. Moreover, both Employee and the Company may bring an action in any court of competent jurisdiction to compel arbitration under this Agreement and/or enforce and arbitration award.

13.3. Arbitration Rules and Procedures. The arbitration is to be conducted in or near the city in which Employee is or was last employed by the Company by JAMS, Inc. ("**JAMS**") or its successors before a mutually selected single neutral arbitrator, under JAMS' then applicable rules and procedures for employment disputes (which will be provided to Employee upon request); provided that the arbitrator shall: (i) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be

permitted by law; and (ii) issue a written arbitration decision including the arbitrator's essential findings and conclusions on which the award was based and a statement of the award. Employee and the Company shall be entitled to all rights and remedies that either would be entitled to pursue in a court of law. Questions of whether a claim is subject to arbitration under this Agreement shall be decided by the arbitrator. Likewise, procedural questions which grow out of the dispute and bear on the final disposition are also matters for the arbitrator. To the maximum extent permitted by applicable law, all claims, disputes, or causes of action under this section, whether by Employee or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The Arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. **BOTH EMPLOYEE AND THE COMPANY ACKNOWLEDGE THAT BY AGREEING TO THIS ARBITRATION PROCEDURE, THEY WAIVE THE RIGHT TO RESOLVE ANY SUCH DISPUTE THROUGH A TRIAL BY JURY OR JUDGE OR ADMINISTRATIVE PROCEEDING**. The Company shall pay all filing fees in excess of those which would be required if the dispute were decided in a court of law (that is, costs that are unique to arbitration) and shall pay the arbitrator's fee. Employee and the Company will pay for their own costs that are not unique to arbitration, including their own attorneys' fees and costs such as, without limitation, costs to subpoena witnesses and/or documents, take depositions and purchase transcripts of hearings or deposition, to copy, facsimile or messenger documents, etc. Any dispute as to whether a cost is unique to arbitration will be exclusively resolved by the arbitrator. Both Employee and the Company have the right to be represented by legal counsel at any arbitration proceeding. The arbitration proceedings will be confidential to the extent permitted by law. Employee and the Company will maintain all information and documents exchanged in connection with and in the course of the arbitration as confidential, except to the extent the disclosure of such information or documentation is necessary to enforce any award or challenge any award as permitted by the applicable law.

13.4. No Change in At-Will Employment. This agreement to arbitrate claims is not a contract of employment, expressed or implied, and Employee and the Company acknowledge that Employee's employment with the Company is at-will and that this agreement does not change the "at-will" status of Employee's employment. **BOTH EMPLOYEE AND THE COMPANY ACKNOWLEDGE THAT THEY HAVE READ AND UNDERSTAND THE TERMS OF SECTION 13, AGREEMENT TO ARBITRATE CLAIMS, AND AGREE TO BE BOUND BY ITS TERMS.**

14. General Provisions.

14.1 Notices. Any notices provided must be in writing and will be deemed effective upon the earlier of personal delivery (including personal delivery by email upon confirmation of receipt) or the next day after sending by overnight carrier, to the Company at its primary office location and to Employee at the address as listed on the Company payroll.

14.2 Severability. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will not affect any other provision or any other jurisdiction, but this Agreement will be reformed, construed and enforced in such jurisdiction to the extent possible in keeping with the intent of the Company and Employee.

14.3 Waiver. Any waiver of any breach of any provisions of this Agreement must be in writing to be effective, and it shall not thereby be deemed to have waived any preceding or succeeding breach of the same or any other provision of this Agreement.

14.4 Complete Agreement. This Agreement, together with the Proprietary Agreement, constitutes the entire agreement between Employee and the Company with regard to the subject matter hereof and is the complete, final, and exclusive embodiment of the Company's and Employee's agreement with regard to this subject matter. This Agreement is entered into without reliance on any promise or representation, written or oral, other than those expressly contained herein, and it supersedes any other such promises, warranties or representations. It cannot be modified or amended except in a writing signed by a duly authorized officer of the Company, with the exception of those changes expressly reserved to the Company's discretion in this Agreement.

14.5 **Counterparts.** This Agreement may be executed in separate counterparts, any one of which need not contain signatures of more than one party, but both of which taken together will constitute one and the same Agreement.

14.6 **Headings.** The headings of the paragraphs hereof are inserted for convenience only and shall not be deemed to constitute a part hereof nor to affect the meaning thereof.

14.7 **Successors and Assigns.** This Agreement is intended to bind and inure to the benefit of and be enforceable by Employee and the Company, and their respective successors, assigns, heirs, executors and administrators, except that Employee may not assign any of Employee's duties hereunder and Employee may not assign any of Employee's rights hereunder without the written consent of the Company, which shall not be withheld unreasonably.

14.8 **Tax Withholding.** All payments and awards contemplated or made pursuant to this Agreement will be subject to withholdings of applicable taxes in compliance with all relevant laws and regulations of all appropriate government authorities. Employee acknowledges and agrees that the Company has neither made any assurances nor any guarantees concerning the tax treatment of any payments or awards contemplated by or made pursuant to this Agreement. Employee has had the opportunity to retain a tax and financial advisor and fully understands the tax and economic consequences of all payments and awards made pursuant to this Agreement.

14.9 **Choice of Law.** All questions concerning the construction, validity and interpretation of this Agreement will be governed by the laws of the State of California.

In Witness Whereof, the Company and Employee have executed this Agreement to become effective as of the Effective Date written above.

Atara Biotherapeutics, Inc.

By: _____
[Name]
Chief Executive Officer

Employee

[NAME]

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: August 8, 2019

/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: August 8, 2019

/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 June 30, 2019, 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: August 8, 2019

/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.