UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2021

OR

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

For the transition period from _____ to _____

Commission File Number 001-36548

ATARA BIOTHERAPEUTICS, INC.

(Exact name of Registrant as specified in its Charter)

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

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

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

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, par value $0.0001 per share ,	ATRA	The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ☒ NO ☐

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. YES ☐ NO ☒

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 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	☐	Small 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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

The aggregate market value of common stock held by non-affiliates of the Registrant, based on the closing sales price for such stock on June 30, 2021 as reported by The Nasdaq Stock Market, was $1,149,785,847. This calculation excludes 10,812,902 shares held by executive officers, directors and stockholders that the Registrant has concluded are affiliates of the Registrant. Exclusion of such shares should not be construed to indicate that any such person possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the registrant or that such person is controlled by or under common control with the Registrant.

The number of outstanding shares of the Registrant's Common Stock as of February 18, 2022 was 93,097,679.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement relating to its 2022 Annual Meeting of Stockholders are incorporated by reference into Part III of this Report where indicated. Such proxy statement will be filed with the U.S. Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

ATARA BIOTHERAPEUTICS, INC.

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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Such forward-looking statements, which represent our intent, belief or current expectations, involve risks and uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. In some cases you can identify these statements by forward-looking words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "could," "would," "project," "predict," "plan," "expect" or the negative or plural of these words or similar expressions. The forward-looking statements include, but are not limited to, statements about:

- our expectations regarding the timing of initiating clinical studies, opening client sites, enrolling clinical studies and reporting results of clinical studies for our programs, including in light of the COVID-19 pandemic;
- the likelihood and timing of regulatory submissions or related approvals for our product candidates, including the initiation, completion and expectations about the timing of approvals for our biologics license application (BLA) and marketing authorization application (MAA) for tab-cel® for patients with Epstein-Barr virus with post-transplant lymphoproliferative disease (EBV+ PTLD);
- the potential indications for our product candidates, if approved for commercial use;
- the potential market opportunities for commercializing our product candidates;
- our Research, Development and License Agreement with Bayer, including potential milestone and royalty payments under such agreement;
- our Commercialization Agreement with Pierre Fabre Medicament, including potential milestone and royalty payments under such agreement;
- our expectations regarding the potential market size and the size of the patient populations for our product candidates, if approved for commercial use;
- estimates of our expenses, capital requirements and need for additional financing;
- our expectation regarding the length of time that our existing capital resources will be sufficient to enable us to fund our planned operations;
- our ability to commercialize our product candidates, if approved for commercial use;
- our ability to develop, acquire and advance product candidates into, and successfully complete, clinical studies;
- the initiation, timing, progress and results of future preclinical studies and clinical studies and our research and development programs;
- our ability to enter into and maintain contracts with clinical research organizations, manufacturing organizations and other vendors for clinical and pre-clinical studies, supplies and other services;
- the scope of protection we are able to obtain and maintain for the intellectual property rights covering our product candidates;
- our financial performance;
- developments and projections relating to our competitors and our industry;
- our ability to manufacture our product candidates for our clinical studies, or if approved, for commercial sale;
- the impact of COVID-19 to our business and operations, as well as the businesses and operations of third parties on which we rely;
- our ability to sell or manufacture approved products at commercially reasonable values;
- the satisfaction of the conditions precedent to the consummation of the asset sale related to the Atara T-Cell Operations and Manufacturing facility, including the receipt of regulatory approvals; and
- timing and costs related to qualification of our manufacturing plant for commercial production.

These statements are only current predictions and are subject to known and unknown risks, uncertainties, including, without limitation, risks and uncertainties associated with the costly and time-consuming pharmaceutical product development process and the uncertainty of clinical success; the COVID-19 pandemic, which may significantly impact (i) our business, research, clinical

development plans and operations, including our operations in South San Francisco and Southern California and at our clinical trial sites, as well as the business or operations of our third-party manufacturer, contract research organizations or other third parties with whom we conduct business, (ii) our ability to access capital, and (iii) the value of our common stock; the sufficiency of our cash resources and need for additional capital, and other factors that may cause our or our industry's actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. We discuss many of these risks in this report in greater detail under the heading "1A. Risk Factors" and elsewhere in this report. You should not rely upon forward-looking statements as predictions of future events. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risks and uncertainties.

In this Annual Report on Form 10-K, unless the context requires otherwise, "Atara," "Atara Biotherapeutics," "Company," "we," "our," and "us" means Atara Biotherapeutics, Inc. and, where appropriate, its subsidiaries.

Summary Risk Factors

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

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

PART I

Item 1. Business

Overview

Atara Biotherapeutics is a pioneer in T-cell immunotherapy, leveraging its novel allogeneic Epstein-Barr virus (EBV) T-cell platform to develop transformative therapies for patients with serious diseases, including solid tumors, hematologic cancers and autoimmune disease. With our lead program in Phase 3 clinical development, we are the most advanced allogeneic T-cell immunotherapy company and intend to rapidly deliver off-the-shelf treatments to patients with high unmet medical need. Our platform leverages the unique biology of EBV T cells and has the capability to treat a wide range of EBV-driven diseases or other serious diseases through incorporation of engineered chimeric antigen receptors (CARs) or T-cell receptors (TCRs). Atara is applying this one platform, that does not require TCR or HLA gene editing, to create a robust pipeline of product candidates, all in the preclinical or investigational stage. Our strategic priorities are:

- ***Tab-cel®***: Atara's most advanced T-cell immunotherapy, tab-cel® (tabelecleucel), is partnered with Pierre Fabre Medicament (Pierre Fabre) for commercialization in Europe and select emerging markets and is currently in Phase 3 development for patients with EBV-driven post-transplant lymphoproliferative disease (EBV+ PTLD) who have failed rituximab or rituximab plus chemotherapy, as well as other EBV-driven diseases;
- ***ATA188***: T-cell immunotherapy targeting EBV antigens believed to be important for the potential treatment ofprimary and secondary progressive multiple sclerosis;
- ***CAR T Programs***:
    - ***ATA2271***: Autologous CAR T immunotherapy, currently in clinical development, targeting solid tumors expressing the tumor antigen mesothelin, which is partnered with Bayer AG (Bayer);
    - ***ATA3271***: Allogeneic CAR T therapy, currently in preclinical development, targeting mesothelin, which is partnered with Bayer; and
    - ***ATA3219***: Allogeneic CAR T targeting CD19, currently in preclinical development, and being developed as a potential best-in-class product, based on a next generation 1XX co-stimulatory domain and the innate advantages of EBV T cells as the foundation for an allogeneic CAR T platform.

Our T-cell immunotherapy platform includes the capability to progress both allogeneic and autologous programs and is potentially applicable to a broad array of targets and diseases. Our off-the-shelf, allogeneic T-cell platform allows for rapid delivery of a T-cell immunotherapy product manufactured in advance of patient need and stored in inventory, with each manufactured lot of cells providing therapy for numerous potential patients. This differs from autologous treatments, in which each patient's own cells must be extracted, genetically modified outside the body and then delivered back to the patient, requiring a complex logistics network. We currently have on hand sufficient tab-cel® drug product inventory to supply commercial demand, if approved and subject to the specifications set forth in such approval, for at least 12 months. For our allogeneic programs, we select the appropriate set of cells for use based on a patient's unique immune profile. In addition, our manufacturing facility has the flexibility to manufacture multiple T-cell and CAR T immunotherapies while integrating research and process science functions to enable increased collaboration for rapid product development. We are currently in the process of completing our facility's commercial production qualification activities for tab-cel® while building inventory according to our commercial product supply strategy.

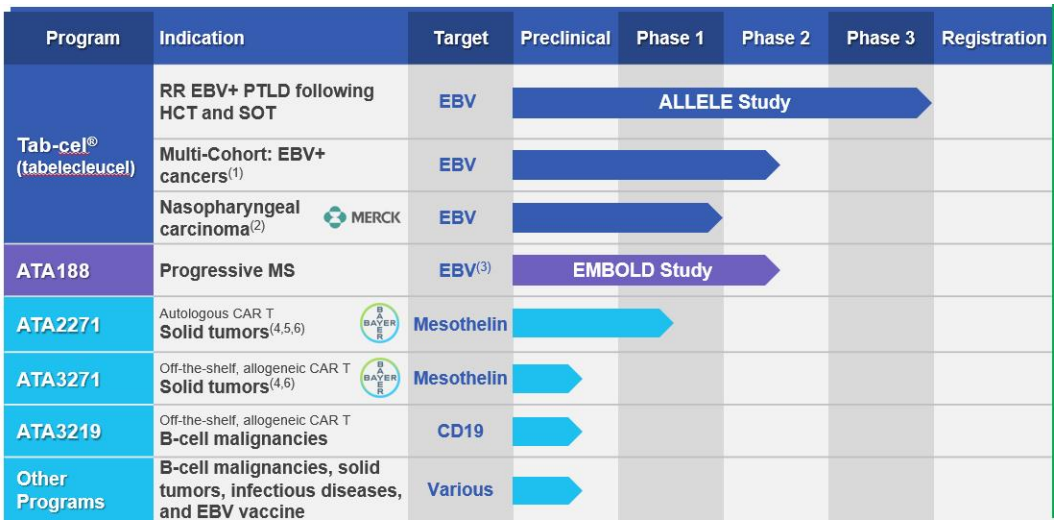
In October 2021, we entered into the Commercialization Agreement with Pierre Fabre (Pierre Fabre Commercialization Agreement), pursuant to which we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia following regulatory approval. We will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America. Under the terms of the Pierre Fabre Commercialization Agreement, we are currently negotiating a Manufacturing and Supply Agreement as well as a number of ancillary agreements to further advance our collaboration with Pierre Fabre.

In December 2020, we entered into a Research, Development and License Agreement with Bayer (the Bayer License Agreement) pursuant to which we granted to Bayer an exclusive, field-limited license under the applicable patents and know-how owned or controlled by us and our affiliates covering or related to ATA2271 and ATA3271. In March 2021, as contemplated by the Bayer License Agreement, we entered into (i) a Manufacturing and Supply Agreement (Bayer Manufacturing Agreement); (ii) a Pharmacovigilance Agreement; (iii) a Quality Agreement; and (iv) a Technology Transfer Agreement, in each case, with Bayer, to further advance our collaboration with Bayer. See section 'Terms of Certain License and Collaboration Agreements' below for additional details.

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

Pipeline

Our pipeline is summarized below:



These investigational agents are not approved by any regulatory agencies. Efficacy and safety have not been established.

EBV+ PTLD: EBV-Associated Post-Transplant Lymphoproliferative Disease; RR: rituximab relapsed/refractory; HCT: allogeneic hematopoietic cell transplant; SOT: solid organ transplant.

We have entered into an agreement with Pierre Fabre to commercialize Tab-cel® for EBV+ cancers in Europe, Middle East, Africa, and other select emerging markets.

Other programs: ATA2431 (B-cell malignancies), and EBV vaccine

(1) Phase 2 multi-cohort study, with possible indications including EBV+ PTLD with CNS involvement, EBV+ PID/AID LPD, EBV+ LMS and other potential EBV-associated diseases.

(2) Phase 1b/2 study in combination with anti-PD-1 therapy, KEYTRUDA® (pembrolizumab), in patients with platinum-resistant or recurrent EBV-associated NPC.

(3) Targeted antigen recognition technology; Phase 2 Randomized Controlled Trial.

(4) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer.

(5) Our CAR T collaboration with MSK will focus on development of a next-generation, mesothelin-targeted CAR T using novel 1XX CAR signaling and PD-1 dominant negative receptor (DNR) checkpoint inhibition technologies.

(6) Worldwide license agreement and research, development and manufacturing collaboration with Bayer to develop our allogeneic off-the-shelf mesothelin CAR T program (ATA3271) and autologous program (ATA2271).

Tab-cel®

EBV+ PTLD

Since its discovery as the first human oncovirus, EBV has been implicated in the development of a wide range of diseases, including lymphomas and other cancers. EBV is widespread in human populations and persists as a lifelong, asymptomatic infection. In healthy individuals, a small percentage of T cells are devoted to keeping EBV in check. In contrast, immunocompromised patients, such as those undergoing hematopoietic cell transplants (HCT) or solid organ transplants (SOT) have a reduced ability to control EBV. Left without appropriate immune surveillance, EBV-transformed cells can, in some patients, proliferate and cause an aggressive, life-threatening cancer called EBV+ PTLD. Nearly all cases of PTLD that occur following HCT are EBV positive while approximately 60% of PTLD cases that occur following SOT are EBV positive.

Historical studies suggest a high unmet medical need for improved therapies in patients with EBV+ PTLDwho have failed rituximab or rituximab plus chemotherapy, with approximately 40% to 60% of patients either not responding to or progressing following this first line of therapy. Expected median overall survival in patients with EBV+ PTLD following HCT who have failed rituximab-based first line therapy is approximately 1.7 months, and for patients with EBV+ PTLD following SOT who have failed rituximab-based first line therapy, the median overall survival is approximately 3.3 months. The use of chemotherapy in patients with EBV+ PTLD who have failed rituximab is frequently associated with significant rates of treatment-related mortality due to the frailty of the patients and severe toxicities associated with chemotherapy. Based on our market research, we estimate there were several hundred EBV+ PTLD patients who failed rituximab or rituximab plus chemotherapy in the U.S. in 2019.

Tab-cel® for EBV+ PTLD

In June 2015, we licensed certain patent rights, know-how and a library of T cells and cell lines specific to EBV fromMSK under an exclusive license agreement. In accordance with the license agreement, we agreed to use commercially reasonable efforts to commercialize the licensed products and to make milestone payments with respect to the licensed programs and to make royalty payments to MSK to the extent product candidates arising from the collaboration are commercialized. Our most advanced product candidate, tab-cel®, is part of this MSK collaboration and targets EBV.

Tab-cel® is an allogeneic EBV-specific T-cell immunotherapy that is currently in Phase 3 development for the treatment of patients with EBV+ PTLD who have failed rituximab or rituximab plus chemotherapy. Tab-cel® is also under development for other EBV+ diseases with significant unmet medical need through a Phase 2 multi-cohort study that was initiated in the third quarter of 2020.

Tab-cel® has received Breakthrough Therapy Designation (BTD) from the U.S. Food and Drug Administration (FDA) for the treatment of patients with EBV+ PTLD after HCT who have failed rituximab, PRIority MEdicines (PRIME) designation from the European Medicines Agency (EMA) for the same indication, and orphan designation in the U.S. and European Union (EU) for the treatment of patients with EBV+ PTLD following HCT or SOT.

In clinical studies conducted at MSK that have enrolled patients withEBV+ PTLD following HCT and SOT, efficacy following treatment with tab-cel® monotherapy compared favorably with historical data in these patient populations. Patients with EBV+ PTLD after HCT who have failed rituximab and were treated with tab-cel® had two-year overall survival of approximately 83% in two separate clinical studies. In the setting of EBV+ PTLD after SOT in patients who have failed rituximab, similar results were observed, with two-year overall survival of approximately 86% in tab-cel®-treated patients. A response rate of greater than or equal to 50% was observed in HCT and SOT patients in these studies.

In December 2017, we initiated two Phase 3 studies for tab-cel® intended to support approval in two separate indications, the treatment of EBV+ PTLD following HCT (which was referred to as the MATCH study) and SOT in patients who have failed rituximab (which was referred to as the ALLELE study). In 2019, after discussion and alignment with regulators, we combined MATCH and ALLELE into a single study (which we now refer to as the ALLELE study) that now consists of an HCT cohort for EBV+ PTLD patients who have failed rituximab, and a single SOT cohort for EBV+ PTLD patients who have failed prior treatment with rituximab with or without chemotherapy. Additionally, we expanded the ALLELE study geographically to include clinical sites in Europe and Canada.

In the third quarter of 2020, we completed an interim analysis for the ALLELE study. Data from the interim analysis showed a 50 percent objective response rate (ORR) to tab-cel® with independent oncologic and radiographic assessment (IORA) in patients with relapsed-refractory EBV+ PTLD following HCT or SOT, that had reached at least six months follow-up after the ORR assessment. This ORR is consistent with previously published investigator assessed data. The tab-cel® safety profile is also consistent with previously published data, with no new safety signals.

In October 2021, we entered into the Pierre Fabre Commercialization Agreement, pursuant to which we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia following regulatory approval. We will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America. See section 'Terms of Certain License and Collaboration Agreements' below for additional details.

In November 2021, we submitted, and the EMA fully validated, an EU marketing authorization application (MAA) for tab-cel® in patients with EBV+ PTLD. Under the accelerated assessment granted by the EMA, review of the MAA is progressing as planned following the EMA day 80 critical assessment report and we anticipate a decision with respect to potential approval of the MAA in the fourth quarter of 2022. We are working with Pierre Fabre to prepare for the potential approval and commercialization of tab-cel® in Europe.

In December 2021, we presented new analysis from the ALLELE study at an oral session at the 63rd American Society of Hematology (ASH) Annual Meeting and Exposition. Top-line data with additional patients and extended follow up confirm a strong ORR in line with prior results, demonstrate durability of response, and supported the MAA submission. There were no new safety signals, consistent with previously published data. We also presented additional data on tab-cel® through several abstracts, including a second oral presentation on long term overall survival from Phase 2 and multi-center EAP studies.

We have performed extensive studies demonstrating analytical comparability between the tab-cel® manufacturing process versions used for the pivotal ALLELE study and that intended for commercialization. Comprehensive comparability analyses included all 74 available product lots manufactured by us and covered 21 key attributes for potency, purity and alloreactivity. We believe analytic comparability between tab-cel® process versions has been demonstrated based on well-established statistical methodology and application of International Council for Harmonization (ICH) guidelines and is further supported by significant and consistent clinical experience. These comparability data analyses were submitted to the EMA through our MAA filing.

In connection with a potential BLA submission for tab-cel® in the United States, we have been in discussions with the FDA on the content of chemistry, manufacturing and controls (CMC) module 3, including the assessment of comparability between the product used in the pivotal ALLELE study and that intended for commercialization.

In late February 2022, we held a Type B CMC meeting with the FDA to discuss and potentially align on comparability between commercial and pivotal clinical trial process versions. Preliminary meeting responses and discussion did not result in alignment on comparability and the FDA has initially recommended we conduct a clinical study with commercial product as FDA does not agree that comparability has been demonstrated between product used in the pivotal ALLELE study and the intended commercial product.

We have responded with additional questions to clarify the FDA's view and proposed several alternative approaches to progress to a BLA submission. We expect additional interactions with the FDA, including receipt of final Type B CMC meeting minutes. Based on the preliminary feedback received from the FDA, we no longer expect to file a BLA in the second quarter of 2022.

We continue to adapt our investment in pre-commercial activities and are continuing our commercial readiness activities based on the progress and timing of potential approval and commercialization of tab-cel® in the U.S.

Tab-cel® Multi-Cohort Study

We continue to pursue development of tab-cel® in additional patient populations, with a primary focus on immunodeficiency-associated lymphoproliferative diseases (IA-LPDs), given the commonality of their EBV-driven mechanism of disease in immunocompromised patients, high unmet medical need and positive clinical data to date with tab-cel®. In patients where previous treatments have failed, the objective response rates, including complete response, were 33.3% (three out of nine patients) in AID-LPD and 37.5% (three out of eight patients) in PID-LPD groups. Tab-cel® was generally well-tolerated with a favorable safety profile consistent with previously published clinical studies. These clinical data demonstrated that tab-cel® was well-tolerated and showed encouraging clinical activity in this patient population, with objective response rates ranging from 50% (two out of four patients) to 80% (four out of five patients). The overall survival (OS) rate at one year in patients with EBV viremia treated in the EAP-201 study was 100 percent for a median follow-up of 14.6 months (min 12.2, max 17.8).

In the third quarter of 2020, we initiated a Phase 2 multi-cohort study and are actively opening sites and enrolling in six patient populations, including four within IA-LPDs and two in other EBV-driven diseases, in both the U.S. and EU. Data from this study is expected in 2023.

Tab-cel® for NPC

Nasopharyngeal carcinoma (NPC) is a type of head and neck cancer that is primarily associated with EBV. Standard treatment for NPC typically includes radiation therapy, platinum-based chemotherapy or a combination of both. Surgical intervention is only rarely employed and is usually only utilized in select early-stage cases. There are no approved therapeutic agents available to treat relapsed/refractory NPC, although there are multiple agents in development for this patient population.

Our Phase 1b study, which was initiated in 2018, achieved its safety endpoints and stable disease in some patients.Due to the evolving treatment landscape of EBV-driven nasopharyngeal carcinoma (NPC), we are not actively conducting any development activities while we reassess our approach and the development and regulatory pathways for patients with platinum resistant or recurrent EBV-drive NPC.

ATA188

Multiple Sclerosis

We are also developing ATA188, an allogeneic T-cell immunotherapy targeting EBV antigens believed to be important for the potential treatment of multiple sclerosis (MS). MS is a chronic autoimmune disorder of the central nervous system (CNS) that disrupts the myelination and normal functioning of the brain, optic nerves and spinal cord through inflammation and tissue loss. The evolution of MS results in an increasing loss of both physical and cognitive (e.g., memory) function. This has a substantial negative impact on the approximately 2.3 million patients worldwide diagnosed and living with MS, with approximately one million of those patients having a progressive form of MS.

There are two categories of MS: progressive MS (PMS) and relapsing-remitting MS (RRMS). RRMS is a form of MS thatis characterized by episodes of new or worsening signs or symptoms (relapses) followed by periods of recovery and quiescence during which the disease does not progress. PMS is a severe form of MS that is characterized by persistent progression and worsening of MS symptoms and physical disability over time for which there are few therapeutic options. There are two types of PMS: primary progressive MS (PPMS) and secondary progressive MS (SPMS). PPMS occurs when the patient has a disease course characterized by steady and progressive worsening after disease onset. SPMS initially begins as RRMS, but once patients have continuous progression of their disease, they have developed SPMS.

Scientific and clinical findings support a potential biologic connection between EBV and MS. EBV is present in nearly all patients with MS. The MS disease course has been shown to correlate with measures of EBV activity, and with exhaustion of endogenous EBV-specific T cell populations. In addition, in separate studies, clear differences in location and frequency of EBV-infected B cells and plasma cells were evident between the brains of subjects without MS and the brains of MS patients, where EBV-infected B cells and plasma cells were in close proximity to areas of active demyelination. Further data suggest that EBV-positive B cells and plasma cells in the CNS have the potential to catalyze an autoimmune response, resulting in the typical MS pathophysiology. In patients with MS, their T cells may be unable to control EBV-positive B cells and plasma cells so that B cells and plasma cells could then accumulate in the brain, function as antigen-presenting cells and generate antibodies that attack and destroy myelin, the protective layer that insulates nerves in the brain and spinal cord. This loss of myelin ultimately leads to MS symptoms. The role of B cells in MS is supported by the approval by the FDA of ocrelizumab for PPMS, which broadly targets B cells (and not plasma cells) outside of the CNS through their expression of a cell surface marker known as CD20.

Based on our analysis of industry data and assumed increases in treatment rates and market share for a best-in-class treatment, we estimate that the potential annual U.S. market opportunity in PMS could be at least $3.5 billion by 2025.

ATA188 for MS

We licensed rights to certain know-how and technology from QIMR Berghofer that uses targetedantigen recognition to create off-the-shelf T-cell immunotherapy product candidates applicable to a variety of diseases, including autoimmune conditions such as MS. Our license agreement with QIMR Berghofer requires that we make various milestone and royalty payments to QIMR Berghofer based on the sales of products arising from this collaboration, if any. We are also working with QIMR Berghofer on the development of EBV-targeted and other virally targeted T cells. Through this technology, we are expanding the role of T-cell-based immunotherapy beyond oncology and viral infections to autoimmune diseases.

Our T-cell immunotherapy product candidate utilizing this technology, ATA188, is an off-the-shelf EBV-specific T-cell preparation that utilizes an MS-specific targeted antigen recognition technology that enables the T cells we administer to selectively identify cells expressing the EBV antigens that we believe are important for the potential treatment of MS. ATA188 is designed to selectively target only those cells which are EBV-positive while sparing those that are not. Recent studies published in *Science* and *Nature* provide new epidemiological data suggesting that EBV is the leading cause of MS, and mechanistic data suggesting EBV infection can initiate and propagate the autoimmune attack on the brain in MS. We believe that eliminating only EBV-positive B cells and plasma cells has the potential to benefit some patients with PMS and SPMS.

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 PMS. The primary objective of this Phase 1 study is to assess the safety of ATA188 in patients followed for at least one year after the first dose. Key secondary endpoints in the study include measures of clinical improvement, using recognized scales for MS symptoms, function and disability including Expanded Disability Status Scale (EDSS), Fatigue Severity Score, MS Impact Scale-29 (physical), Timed 25-Foot Walk (T25FW), 9-Hole Peg Test, 12-Item MS Walking Scale (MSWS-12) and Visual Acuity.

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

We are currently progressing an open-label extension (OLE) of the Phase 1 study of ATA188 for patients with primary and secondary PMS. We presented long-term two-year clinical data from the OLE and translation data from the Phase 1 study in October 2021 at the 37th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS). Based on the clinical data, most patients either demonstrated sustained disability improvement or stable disease The presentation also featured new imaging biomarker data considered to reflect the state of myelination in the central nervous system, known as magnetization transfer ratio (MTR). MTR may provide important insights into the mechanism of EDSS improvement in our clinical assessment of ATA188. We also presented encore data at the 29th Annual Meeting of the European Charcot Foundation in November 2021, including an overview of the methodology planned to determine the potential pharmacodynamic effect of ATA188, by quantifying a decrease of EBV infected cells following treatment with ATA188.

In June 2020, we enrolled the first patient in our Phase 2, randomized, double-blind, placebo-controlled dose-expansion trial (EMBOLD) to evaluate the efficacy and safety of ATA188 in patients with PMS and we continue to enroll patients in this study. Based on the data from the Phase 1a portion of the study, we selected the cohort 4 dose for enrollment in the Phase 2 EMBOLD study. In addition to measuring change in disability measures compared to baseline, especially SDI over time, the study also includes multiple measures of patients' function as well as various biomarkers.

In January 2021, we discussed updates to the design of the EMBOLD study with the FDA and gained alignment on several points, as well as potential registrational studies: (i) a disability improvement endpoint is appropriate, with the FDA articulating a preference for EDSS improvement; (ii) the criteria used to enroll the study population of SPMS and PPMS are appropriate; and (iii) the Phase 2 trial should run for at least 12 months, and a properly conducted interim analysis is appropriate. We also submitted a protocol amendment to the FDA, increasing the number of patients to 80, changing the primary end point of the study to EDSS disability improvement and maintaining the biological and functional endpoints.

We submitted a request for fast track designation for ATA188 for treatment of PPMS and SPMS, and in December 2021 the FDA granted fast track designation to ATA188 for treatment of PPMS and SPMS.

We continue to advance enrollment in the EMBOLD study and expect toconduct a planned formal interim analysis of the EMBOLD study in the second quarter of 2022 to assess efficacy, safety and biomarker data to inform adjustments to sample size, if needed, and to confirm our development strategy moving forwardFollowing completion of the interim analysis, we plan to discuss potential development pathways for ATA188 with the FDA andcommunicate our decision on next steps for the program, including rationale, while maintaining the integrity of the study. We expect to complete target enrollment in this study shortly after completion of the interim analysis.

CAR T Programs

Our current CAR T pipeline is as follows:

	Indication	Target	Technologies	
ATA2271	Autologous Solid tumors(2)	Mesothelin	PD-1 DNR 1XX co-stimulation	BAYER · Memorial Sloan Kettering Cancer Center
ATA3271	Off-the-shelf, allogeneic Solid tumors(2)	Mesothelin	PD-1 DNR 1XX co-stimulation	BAYER
ATA3219	Off-the-shelf, allogeneic B-cell malignancies	CD19	1XX co-stimulation	ATARA BIO
ATA2431	B-cell malignancies	CD19-CD20	Mut06 co-stimulation	MOFFITT CANCER CENTER
Other CAR-T	Infectious diseases and solid tumors	Undisclosed	1XX co-stimulation	Memorial Sloan Kettering Cancer Center

DNR: Dominant Negative Receptor

(1) Worldwide license agreement and research, development and manufacturing collaboration with Bayer to develop Atara's allogeneic off-the-shelf mesothelin CAR T program (ATA3271) and autologous program (ATA2271)

(2) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer

ATA2271/ATA3271

Our next-generation CAR T immunotherapy programs include autologous ATA2271 and allogeneic ATA3271 targeting mesothelin, which is a tumor antigen expressed on a number of solid tumors including mesothelioma, ovarian cancer, pancreatic cancer, non-small cell lung cancer and other tumors over-expressing mesothelin. Both programs were licensed to Bayer in December 2020, pursuant to an exclusive, field-limited license (the Bayer License Agreement) See section 'Terms of Certain License and Collaboration Agreements' below for additional details.

In 2018, we entered into several agreements to expand our collaboration with MSK to the development of CAR T immunotherapies, with a license in May 2018 related to multiple collaboration targets and a license in December 2018 related to our next-generation CAR T program targeting mesothelin. Under these CAR T agreements, we agreed to use commercially reasonable efforts to develop, obtain regulatory approval and, if approved, commercialize certain collaboration targets and to make certain milestone and royalty payments.

ATA2271 is designed to improve efficacy persistence, and durability of response versus CD28/CD3z-based CARs by using a novel 1XX CAR co-stimulatory signaling domain and cell intrinsic checkpoint inhibition technology with a PD-1 dominant negative receptor (DNR). Data from investigational new drug application (IND) enabling studies for ATA2271 were presented at the American Association for Cancer Research (AACR) Virtual Meeting II in June 2020. These data support the first application of the combination of 1XX co-stimulatory domain and cell intrinsic checkpoint inhibition technology with a PD-1 DNR that are associated with less cell exhaustion, improvements in functional persistence, serial cell killing and in vivo efficacy, which was maintained through multiple tumor re-challenges when compared with first-generation CD28/CD3z-based mesothelin CAR. The FDA accepted the IND application submitted by our collaborators at MSK in August 2020, and in September 2020, MSK initiated an open-label, single-arm Phase 1 clinical study of ATA2271 for patients with advanced mesothelioma. The first preclinical, clinical and translational data from the lowest dose cohorts of this study, demonstrating early safety and persistence of ATA2271, was presented during a mini oral

session at the European Society for Medical Oncology (ESMO) Immuno-Oncology Congress in December 2021. MSK has enrolled and dosed the third cohort of this study. In February 2022, MSK notified the FDA of a fatal serious adverse event associated with a patient treated in the third, higher dose cohort in this study. MSK has voluntarily paused enrollment of new patients in this study on a temporary basis while additional information regarding this case is gathered and reviewed. The FDA notified MSK of its agreement with MSK's decision. Subject to the outcome of this review and resumption of enrollment of new patients in this study, we expect to provide a data update from this Phase 1 study in 2022.

We are also developing and continue to advance the IND-enabling studies for ATA3271, an off-the-shelf, allogeneic CAR T therapy targeting mesothelin using a PD-1 DNR and 1XX CAR co-stimulatory signaling domain through our EBV T-cell platform, and we expect our partner Bayer to file the IND in the fourth quarter of 2022. We do not believe the temporary pause in the ATA2271 study enrollment impacts the IND-enabling work to advance ATA3271, a separate, off-the-shelf, allogeneic CAR T therapy. Preclinical data for ATA3271 demonstrates, we observed anti-tumor activity that we believe indicated functional persistence and significant survival benefit, and we found no evidence of allocytotoxicity in vivo, suggesting that allogeneic MSLN-CAR-engineered EBV T cells are a promising approach for the treatment of MSLN-positive cancers. These data were presented at the Society for Immunotherapy of Cancer (SITC) 35th Annual Meeting in November 2020. In November 2021, we presented additional preclinical data for ATA3271 at the SITC 36th Annual Meeting.

ATA3219

We are also developing ATA3219, an off-the-shelf, allogeneic CD19 CAR T immunotherapy targeting B-cell malignancies as a potential best-in-class therapy without the need for TCR gene editing, using our next-generation 1XX CAR co-stimulatory domain and EBV T-cell platform. While other approaches use gene editing to address alloreactivity and potential graft-vs-host disease (GVHD), our EBV T-cell platform does not require TCR gene editing and leverages partial matching for the EBV T-cell and the patient HLA genotype, which has not shown any signs of product-associated GVHD in patients. Data from preclinical studies for ATA3219 suggest enhanced functional persistence, polyfunctional phenotype and efficient targeting of CD19-expressing tumor cells both in vitro and in vivo with a manufacturing process that focuses on T cell stemness.

Based on academic data from a clinical study, an EBV T-cell platform has the potential to generate off-the-shelf, allogeneic CAR T immunotherapies with high response rates, durable responses and low risk of toxicity that can be rapidly delivered to patients.

We continue to make progress on IND-enabling studies and plan to submit an IND for ATA3219 for patients with B-cell malignancies in the fourth quarter of 2022.

Additional Programs and Platform Expansion Activities

In addition to the prioritized programs described above, we have a number of preclinical programs. We are collaborating with Moffitt to develop ATA2431, a multi-targeted CAR T immunotherapy targeting B-cell malignancies. We are also collaborating with QIMR Berghofer to develop a potential next generation EBV vaccine which is differentiated from earlier EBV vaccine efforts that solely focused on B cell responses to EBV. We have also discontinued some preclinical programs and returned them to our collaborators. For example, we returned ATA2431, an acute myeloid leukemia (AML) program, to Moffitt in August 2021 and returned the ATA368 program for patients with human papillomavirus (HPV) associated cancers to QIMR Berghofer in December 2021.

We believe our platform will have utility beyond the current set of targets to which it has been directed. We continue to evaluate additional product candidates, including those derived from collaborations with our partners. We also continue to evaluate opportunities to license or acquire additional product candidates or technologies to enhance our existing platform.

Competition

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. 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. Some of these competitors or potential competitors have significantly greater established presences in the market, financial resources and technical expertise than we do. 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.

Should any of our T-cell product candidates be approved for use, we will face substantial competition. In addition to the current standard of care for patients, commercial and academic clinical studies are being pursued by a number of parties in the field of immunotherapy. Early results from these studies have fueled continued interest in T-cell immunotherapy. In addition, if approved, our T-cell programs would compete with currently marketed drugs and therapies used for treatment of the indications we are addressing, and potentially with product candidates currently in development for the same indications.

EBV+ PTLD

There are currently no FDA- or EMA-approved products for the treatment of EBV+ PTLD. However, some marketed products and therapies are used off-label in the treatment of EBV+ PTLD, such as rituximab and combination chemotherapy regimens. In addition, a number of companies and academic institutions are developing product candidates for EBV+ PTLD and other EBV-driven diseases including: Viracta Therapeutics, Inc., which is conducting a pivotal, Phase 2 clinical study for nanatinostat (formerly named tractinostat, or VRx-3996) in combination with antiviral drug valganciclovir in relapsed/refractory EBV+ lymphomas; AlloVir (formerly known as ViraCyte), which has completed a Phase 2 clinical study for posoleucel (formerly named Viralym-M, (ALVR105)), an allogeneic, multi-virus T-cell product that targets six viruses in allogeneic HSCT recipients with ≥1 treatment-refractory infection, including EBV, and is conducting a pivotal study for Virus-Associated Hemorrhagic-Cystitis, as well as a Phase 2 proof of concept trial for the prevention of BKV, CMV, AdV, EBV, HHV06 and JCV in post-allogeneic HSCT patients; and Tessa Therapeutics Pte Ltd., is conducting a Phase 12 clinical study of its autologous CD30 CART in CD30+ NHL and funding a Phase 1, investigator-sponsored study at Baylor College of Medicine, for its allogeneic CD30-CAR EBVST product candidate.

Multiple Sclerosis

Competition in the MS market is high with at least 20 therapies, including four generics or bioequivalents, approved in the U.S. and EU for the treatment of various forms of MS, including clinically isolated syndrome, relapsing-remitting MS (RRMS), secondary progressive MS (SPMS) and primary progressive MS (PPMS). There are many competitors in the MS market, including major multi-national fully-integrated pharmaceutical companies and established biotechnology companies. Most recently, Ponvory (S1P modulator), marketed by Johnson & Johnson, and Kesimpta® (anti-CD20 monoclonal antibody), marketed by Novartis, were approved in the U.S. and/or EU for the treatment of relapsing forms of MS.

There are numerous development candidates in Phase 3 studies for both relapsing and/or progressive forms of MS and additional novel agents could be approved in either or both indications in the future including TG Therapeutics' anti-CD20 monoclonal antibody ublituximab (estimated PDUFA 09/2022), Merck KGaA's Bruton's tyrosine kinase (BTK) inhibitor, evobrutinib, Roche's BTK inhibitor, fenebrutinib, Sanofi's BTK inhibitor, tolebrutinib and AB Science's tyrosine kinase inhibitor, masitinib. Medicinova is planning to initiate a Phase 3 study of its PDE inhibitor, ibudilast (MN166) in non-active SPMS.

CAR T Program

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

Terms of Certain License and Collaboration Agreements

Out-licensing

Bayer License and Collaboration Agreements

In December 2020, we entered into the Bayer License Agreement, pursuant to which we granted to Bayer an exclusive, field-limited license under the applicable patents and know-how owned or controlled by us and our affiliates covering or related to ATA2271 and ATA3271 (the Licensed Products), in each case, targeting mesothelin.

Under the terms of the Bayer License Agreement, we will be responsible at our cost for all mutually agreed preclinical and clinical activities for ATA2271 through the first in human Phase 1 clinical study in collaboration with MSK, following which Bayer will be responsible for the further development of ATA2271 at its cost. Bayer will be responsible for the development of ATA3271, except for certain mutually agreed preclinical, translational, manufacturing and supply chain activities to be performed by us relating to ATA3271, in each case at Bayer's cost. Bayer will also be solely responsible for commercializing the Licensed Products at its cost.

In December 2020, we received an upfront cash payment of $45.0 million from Bayer for the exclusive license grant, and an additional $15.0 million upfront reimbursement payment for certain research and process development activities to be performed by us. We are also entitled to receive (i) up to $5.0 million for additional, specified translational activities under the Bayer License Agreement and (ii) an aggregate of up to $610.0 million in milestone payments upon achieving certain development, regulatory and commercial milestones relating to the Licensed Products. In addition, we are eligible to receive from Bayer tiered royalties at percentages up to low double digits on worldwide net product sales of the Licensed Products on a country-by-country and product-by-product basis until the later of 12 years after the first commercial sale in such country or the expiration of specified patent rights in such country, subject to certain reductions and aggregate minimum floors. We also granted Bayer a time limited, non-exclusive right to negotiate a license to additional Atara CAR-T product candidates if we decide to pursue an out-license of such CAR-T product candidates.

In March 2021, as contemplated under the Bayer License Agreement, we entered into (i) a Manufacturing and Supply Agreement (Bayer Manufacturing Agreement); (ii) a Pharmacovigilance Agreement; (iii) a Quality Agreement; and (iv) a Technology Transfer Agreement (Bayer Tech Transfer Agreement), to further advance our collaboration.

The Bayer Tech Transfer Agreement defines the transfer to Bayer of the ATA3271 manufacturing process being developed as part of the CMC services in the Bayer License Agreement. Upon entering into this agreement, we invoiced Bayer 20 percent of the total fee of $15.3 million under the Bayer Tech Transfer Agreement, or $3.1 million, which we received in the second quarter of 2021 and invoiced 40 percent of the total fee, or $6.1 million, in January 2022. The remainder of the fee will be billed as follows: (i) 20 percent in January 2023 and (ii) 20 percent upon the technology transfer completion.

The Bayer Manufacturing Agreement defines the terms for the manufacture of Phase 1 and 2 allogeneic mesothelin-directed CAR T-cell therapies for Bayer to use in clinical trials at a price based on our costs plus a reasonable margin, which is consistent with our standalone selling price. Under the Bayer Manufacturing Agreement, we will also provide storage and distribution services to Bayer at a price that is consistent with our standalone selling price for these services.

Upon entering into the Bayer Manufacturing Agreement, Bayer submitted, and we approved, a binding purchase order for manufacturing services and storage services. Any fees for the manufacturing services will be invoiced as follows: (i) 50 percent upon written acceptance by us of the binding purchase order, and (ii) the remainder upon delivery of the certification of analysis of such lots to Bayer. Storage and distribution services are billed monthly as those services are provided to Bayer.

In March 2021, we invoiced Bayer 50 percent of the total estimated supply price of $13.1 million for manufacturing services under the initial purchase order for the supply of six lots, or $6.6 million, which we received in the second quarter of 2021. The remainder of the supply price will be billed upon the release of the lots ordered by Bayer.

Pierre Fabre Commercialization Agreement

In October 2021, we entered into the Pierre Fabre Commercialization Agreement, pursuant to which, we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia (the Territory) following regulatory approval. Atara will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America.

We are responsible at our cost for the conclusion of the ongoing Phase 3 ALLELE clinical study and the Phase 2 multi-cohort clinical study. We will also be responsible at our cost for certain other activities directed to obtaining regulatory approval for tab-cel® for EBV-positive lymphoproliferative disease pursuant to the terms of the Pierre Fabre Commercialization Agreement in Europe. Pierre Fabre will be responsible at its cost for obtaining and maintaining all other regulatory approvals and for commercialization and distribution of tab-cel® in the Territory. We will own any intellectual property rights developed solely by us under the Pierre Fabre Commercialization Agreement. We are responsible for manufacturing and supplying Pierre Fabre with tab-cel® for commercialization in the Territory at Pierre Fabre's cost.

In the fourth quarter of 2021, Pierre Fabre has paid us an upfront cash payment of $45.0 million for the exclusive license grant. We are also entitled to receive an aggregate of up to $318.0 million in milestone payments upon achieving certain regulatory and commercial milestones. In addition, we are eligible to receive significant double-digit tiered royalties as a percentage of net sales of tab-cel® until the later of 12 years after the first commercial sale in such country, the expiration of specified patent rights, or the expiration of all regulatory exclusivity for such product on a country-by-country basis.

In-licensing

MSK License and Collaboration Agreements

In June 2015, we entered into a license agreement with MSK, under which MSK granted us a worldwide, exclusive license to certain patent rights, know-how and a library of T cells and cell lines, to research, develop, manufacture and commercialize three clinical stage T-cell therapies. We are obligated to make payments 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 must make certain minimum annual royalty payments to MSK, which are creditable against earned royalties owed for the same annual period. We are also obligated to pay a low double-digit percentage of any consideration we receive for sublicensing the licensed rights. The license agreement expires on a licensed product-by-product and country-by-country basis, on the latest of: (i) expiration of the last licensed patent rights related to a licensed product, (ii) expiration of any market exclusivity period granted by law with respect to a licensed product, and (iii) a specified number of years after the first commercial sale of the licensed product in each country. Upon expiration of the license agreement, Atara will retain non-exclusive rights to the licensed products.

In May and December 2018, we licensed additional technology from MSK. 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.

In March 2021, we amended and restated our license agreement with MSK to: (i) terminate our license to certain rights related to WT1 and cytomegalovirus ("CMV"); and (ii) license additional know-how rights not otherwise covered by our existing agreements.

QIMR Berghofer License and Collaboration Agreements

In October 2015, we entered into an exclusive license agreement and a research and development collaboration agreement with QIMR Berghofer. Under the terms of the license agreement, we obtained an exclusive, worldwide license to develop and commercialize allogeneic T-cell therapy programs utilizing technology and know-how developed by QIMR Berghofer. In September 2016, the exclusive license agreement and research and development collaboration agreement were amended and restated. Under the amended and restated agreements, we obtained an exclusive and worldwide license to develop and commercialize additional T-cell programs, as well as the option to license additional technology. We exercised this option in June 2018. We further amended and restated our license agreement and research and development collaboration agreements with QIMR Berghofer in August 2019 to terminate our license to certain rights related to cytomegalovirus (CMV). In addition, we further amended and restated our license agreement and research and development collaboration agreements with QIMR Berghofer in August 2020 to terminate our license to certain rights related to BK polyomavirus and JC polyomavirus. In December 2021, we further amended and restated our license agreement and research and development collaboration agreements with QIMR Berghofer to terminate our license to certain rights related to HPV associated cancers. We refer to our August 2020 third amended and restated license agreement with QIMR Berghofer as the QIMR License Agreement and our August 2020 third amended and restated research and development collaboration agreement with QIMR Berghofer as our QIMR Collaboration Agreement.

The QIMR License Agreement provides for various milestone and low to mid single-digit royalty payments to QIMR Berghofer based on future product sales, if any. Under the terms of the QIMR Collaboration Agreement, we are required to reimburse the cost of agreed-upon development activities related to programs developed under the collaboration. The QIMR Collaboration Agreement also provides for various milestone payments to QIMR Berghofer based on the achievement of certain developmental and regulatory milestones.

Intellectual Property

Our commercial success depends in part on our ability to obtain and maintain proprietary protection for our product candidates, to operate without infringing on the proprietary rights of others and to prevent others from infringing our proprietary rights. We seek to protect our proprietary position by, among other methods, filing U.S. and non-U.S. patent applications related to our proprietary technology, inventions and improvements that are important to the development and implementation of our business. We also rely on trademarks, trade secrets, know-how, continuing technological innovation and potential in-licensing opportunities to develop and maintain our proprietary position. Some of patents, trademarks, trade secrets, know-how and other intellectual property rights we rely on are owned by us and others are in-licensed from our partners. 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. Additionally, we expect to benefit from a variety of statutory frameworks in the U.S., Europe and other countries that relate to the regulation of biosimilar molecules and orphan drug status. These statutory frameworks provide certain periods of regulatory exclusivity for qualifying molecules. See "Government Regulation."

Patents

We seek composition-of-matter and/or associated method patents, including method-of-treatment patents, for each of our product candidates in key therapeutic areas. The U.S. patent system permits the filing of provisional and non-provisional patent applications. A provisional patent application is not examined for patentability by the U.S. Patent and Trademark Office (USPTO), and automatically expires 12 months after its filing date. As a result, a provisional patent application cannot mature into an issued patent. Provisional patent applications are often used, among other things, to establish an early effective filing date for a later-filed non-provisional patent application. A non-provisional patent application is examined by the USPTO and can mature into a patent once the USPTO determines that the claimed invention meets the standards of patentability.

Individual patents extend for varying periods of time depending on the date of filing of the patent application, the priority date claimed, and the legal term of patents as determined by the applicable law in the countries in which those patents are obtained. Generally, patents issued from applications filed in the U.S. are effective for 20 years from the earliest non-provisional filing date. In addition, in certain instances, a patent term can be extended to recapture a portion of the term effectively lost as a result of the FDA regulatory review period; however, the restoration period cannot be longer than five years and the total patent term including the restoration period must not exceed 14 years following FDA approval. Additionally, patent term adjustments can extend term to account for certain delays by the USPTO during prosecution before that office. The duration of non-U.S. patents varies in accordance with provisions of applicable local law, but typically, the life of a non-U.S. patent is 20 years from the earliest international filing date, not inclusive of any patent term extension that may be available. The actual protection afforded by a patent varies on a product-by-product basis, from country to country and depends upon many factors, including the type of patent, the scope of its coverage, the availability of extensions of patent term, the availability of legal remedies in a particular country and the validity and enforceability of the patent.

National and international patent laws concerning protein-based biologics such as our products remain highly unsettled. No consistent policy regarding the patent-eligibility or the breadth of claims allowed in patents in this field has emerged to date among the U.S., Europe or other countries. Changes in either the patent laws or in interpretations of patent laws in the U.S. or other countries can diminish our ability to protect our inventions and enforce our intellectual property rights. Accordingly, we cannot predict the breadth or enforceability of claims that may be granted in our patents or in third-party patents. The biotechnology and pharmaceutical industries are characterized by extensive intellectual property litigation. Our ability to maintain and solidify our proprietary position for our product candidates and technology will depend on our success in obtaining effective claims for our patents and enforcing those claims once a patent is granted. We do not know whether any of our patent applications will result in the issuance of any patents. Our issued patents may be challenged, invalidated or circumvented, and the rights granted under any issued patents may not provide us with sufficient protection or competitive advantages against competitors with similar technology. Furthermore, our competitors may independently develop and commercialize similar drugs or duplicate our technology, business model or strategy without infringing our patents. Because of the extensive time required for clinical development and regulatory review of any drug we may develop from our product candidates, it is possible that, before any of our drugs can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby reducing any advantage of any such patent.

Our global patent estate consists of both solely-owned and in-licensed patents and patent applications, is directed to compositions of matter and/or associated methods, including methods of treatment, and consists of 33 patent families having a total of more than 290 issued patents or patent applications. Our patents and patent applications (if issued) are expected to expire between 2023 and 2042, not inclusive of any patent term extension that may be available in any associated jurisdiction.

Trade Secrets

In addition to patents, we rely upon unpatented trade secrets and know-how and continuing technological innovation to develop and maintain our competitive position. We seek to protect our proprietary information, in part, using confidentiality agreements with our commercial partners, collaborators, employees and consultants and invention assignment agreements with our employees. These agreements are designed to protect our proprietary information and, in the case of the invention assignment agreements, to grant us ownership of technologies that are developed by an employee. These agreements may be breached, and we may not have adequate remedies for any such breach or any unauthorized disclosure of our proprietary information. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our commercial partners, collaborators, employees and consultants use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Trademarks

We also rely upon trademarks to develop and maintain our competitive position, and we continue to pursue and obtain trademark rights relating to our business. We have a vigorous global program of trademark registration and enforcement to maintain and strengthen the value of our trademarks and prevent the unauthorized use of those trademarks. Our global trademark portfolio consists of sixteen different trademark families comprised of more than 178 registrations and pending applications.

Government Regulation and Product Approval

As a biopharmaceutical company that operates in the United States, we are subject to extensive regulation. Our T-cell immunotherapies, if approved, will be products regulated as biological products, or biologics. With this classification, commercial production of our products will need to occur in registered facilities in compliance with current good manufacturing practice (cGMP) for biologics. The FDA categorizes human cell- or tissue-based products as either minimally manipulated or more than minimally manipulated and has determined that more than minimally manipulated products require clinical trials to demonstrate product safety and efficacy and the submission of a BLA for marketing authorization. Our product candidates are considered more than minimally manipulated and will require evaluation in clinical trials and the submission and approval of a BLA before we can market them.

Government authorities in the United States (at the federal, state and local level) and in other countries extensively regulate, among other things, the research, development, testing, manufacturing, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, tracking and tracing, post-approval monitoring and reporting, marketing and export and import of biopharmaceutical products such as those we are developing. Our product candidates must be approved by the FDA before they may be legally marketed in the U.S. and by the appropriate foreign regulatory agency before they may be legally marketed in foreign countries. Generally, our activities in other countries will be subject to regulation that is similar in nature and scope as that imposed in the U.S., although there can be important differences. Additionally, some significant aspects of regulation in Europe are addressed in a centralized way, but country-specific regulation remains essential in many respects. The process for obtaining regulatory marketing approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources.

U.S. Product Development Process

In the U.S., the FDA regulates pharmaceutical and biological products under the Federal Food, Drug and Cosmetic Act (FDCA), the Public Health Service Act (PHSA), and their implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. FDA sanctions could include, among other actions, refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning or other enforcement letters, product recalls or withdrawals from the market, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a biological product may be marketed in the U.S. generally involves the following:

- completion of nonclinical laboratory tests and animal studies according to good laboratory practices (GLPs), and applicable requirements for the humane use of laboratory animals or other applicable regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- approval by an independent Institutional Review Board (IRB), or ethics committee at each clinical site before the trial is commenced;
- performance of adequate and well-controlled human clinical trials according to the FDA's regulations commonly referred to as good clinical practices (GCPs), and any additional requirements for the protection of human research patients and their health information, to establish the safety and efficacy of the proposed biological product for its intended use;
- submission to the FDA of a BLA for marketing approval that includes substantial evidence of safety, purity, and potency of the drug from analytical (CMC) studies and from results of nonclinical testing and clinical trials;
- satisfactory completion of an FDA Advisory Committee review, if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities where the biological product is produced to assess compliance with cGMP, to assure that the facilities, methods and controls are adequate to preserve the biological product's identity, strength, quality and purity and, if applicable, the FDA's current good tissue practices (GTPs) for the use of human cellular and tissue products;

- potential FDA inspection of the nonclinical study and clinical trial sites that generated the data in support of the BLA; and
- FDA review and approval, i.e., licensure of the product candidate that is the subject of the BLA.

Before testing any biological product candidate, including our product candidates, in humans, the product candidate enters the preclinical testing stage. Preclinical tests, also referred to as nonclinical studies, include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies to assess the potential safety and activity of the product candidate. The conduct of the preclinical tests must comply with federal regulations and requirements including applicable GLPs. The clinical trial sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical trial protocol, to the FDA as part of the IND. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials and places the trial on a clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a biological product candidate at any time before or during clinical trials due to unacceptable and significant risks to clinical trial subjects or non-compliance with FDA requirements. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only under terms authorized by the FDA. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such trials.

Clinical trials involve the administration of the biological product candidate to patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety, including stopping rules that assure a clinical trial will be stopped if certain adverse events should occur. Each protocol and any amendments to the protocol must be submitted to the FDA as part of the IND. Clinical trials must be conducted and monitored in accordance with the FDA's regulations comprising the GCP requirements, including the requirement that all research patients provide informed consent. Further, each clinical trial must be reviewed and approved by an independent IRB at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the form and content of the informed consent document that must be signed by each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. Some studies also include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which provides authorization for whether or not a study may move forward at designated check points based on access to certain data from the study and may halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy. There are also requirements governing the reporting of ongoing clinical studies and clinical study results to public registries.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- *Phase 1*. The biological product is initially introduced into healthy human subjects and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients.
- *Phase 2*. The biological product is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.
- *Phase 3*. Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency, and safety in an expanded patient population at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk to benefit ratio of the product and provide an adequate basis for product labeling.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up. During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data, and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND safety reports must be promptly submitted to the FDA and to investigators for serious and unexpected adverse events, findings from other studies that suggest a significant risk in humans exposed to the drug, laboratory animal testing or in vitro testing that suggest a significant risk for human patients, or any clinically important increase in the rate of a serious suspected adverse reaction over the rate listed in the protocol or investigator brochure. The sponsor must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, if at all. The FDA or the sponsor or its data safety monitoring board may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research patients are being exposed to an

unacceptable health risk, including risks inferred from other unrelated immunotherapy trials. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to patients.

Concurrently with clinical trials, companies usually complete additional studies and must also develop additional information about the physical characteristics of the biological product as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents with use of biological products, the FDCA, PHSA and FDA's implementing regulations emphasize the importance of manufacturing control for products whose attributes cannot be precisely defined. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the sponsor must develop methods for testing the identity, strength, quality, potency and purity of the final biological product. Additionally, appropriate packaging must be selected and tested, and stability studies must be conducted to demonstrate that the biological product candidate does not undergo unacceptable deterioration over its shelf life.

U.S. Review and Approval Processes

After the completion of clinical trials of a biological product, FDA approval of a BLA for an innovator biological product must be obtained before commercial marketing of the biological product. The BLA submission must include results of product development, laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information. The testing and approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all.

Under the Prescription Drug User Fee Act, as amended (PDUFA), each BLA must be accompanied by a significant user fee. The FDA adjusts the PDUFA user fees for licensed innovator biological products on an annual basis. PDUFA also imposes an annual program fee for innovator biological products. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. Additionally, no user fees are assessed on BLAs for innovator biological products designated as orphan drugs, unless the product also includes a non-orphan indication.

Within 60 days following submission of the application, the FDA reviews a BLA submission to determine if it is substantially complete before the agency accepts it for filing. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review of the BLA. The FDA reviews the BLA to determine, among other things, whether the proposed product is safe, potent, and/or effective for its intended use, and has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMP to assure and preserve the product's identity, safety, strength, quality, potency and purity. The FDA may refer applications for novel biological products or biological products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions. During the biological product approval process, the FDA also determines whether a Risk Evaluation and Mitigation Strategy (REMS) is necessary to assure the safe use of the biological product. A REMS is a safety strategy to manage a known or potential serious risk associated with a medicine and to enable patients to have continued access to such medicines by managing their safe use, and could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. If the FDA concludes a REMS is needed, the sponsor of the BLA must submit and obtain approval for a proposed REMS. The FDA will not approve a BLA without a REMS, if required.

Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. For immunotherapy products, the FDA also will not approve the product if the manufacturer is not in compliance with the GTPs, to the extent applicable. GTPs are FDA regulations and guidance documents that govern the methods used in, and the facilities and controls used for, the manufacture of human cells, tissue, and cellular and tissue-based products (HCT/Ps), which are human cells or tissue intended for implantation, transplant, infusion, or transfer into a human recipient. The primary intent of the GTP requirements is to ensure that cell and tissue-based products are manufactured in a manner designed to prevent the introduction, transmission and spread of communicable disease. FDA regulations also require tissue establishments to register and list their HCT/Ps with the FDA and, when applicable, to evaluate donors through screening and testing. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure that the clinical trials were conducted in compliance with IND trial requirements and GCP requirements. To assure cGMP, GTP and GCP compliance, an applicant must incur significant expenditure of time, money and effort in the areas of training, record keeping, production, and quality control.

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval and deny approval. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. If the agency decides not to approve the BLA in its present form, the FDA will issue a complete response letter that describes all of the specific deficiencies in the BLA identified by the FDA. The deficiencies identified may be minor, for example, requiring labeling changes, or major, for example, requiring additional clinical trials. Additionally, the complete response letter may include recommended actions that the applicant might take to place the application in a condition for approval. If a complete response letter is issued, the applicant may either resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application.

If a product receives regulatory approval, the approval may be limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. Further, the FDA may require that certain contraindications, warnings or precautions be included in the product labeling. The FDA may impose restrictions and conditions on product distribution, prescribing, or dispensing in the form of a risk management plan, or otherwise limit the scope of any approval. In addition, the FDA may require post marketing clinical trials, sometimes referred to as Phase 4 clinical trials, designed to further assess a biological product's safety and effectiveness, and testing and surveillance programs to monitor the safety of approved products that have been commercialized.

In addition, under the Pediatric Research Equity Act (PREA), a BLA or supplement to a BLA must contain data to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. With enactment of the Food and Drug Administration Safety and Innovation Act of 2012, or FDASIA, sponsors must also submit pediatric study plans prior to the assessment data. Those pediatric study plans must contain an outline of the proposed pediatric study or studies the applicant plans to conduct, including study objectives and design, any deferral or waiver requests, and other information required by regulation. The applicant, the FDA and the FDA's internal review committee must then review the information submitted, consult with each other, and agree upon a final plan. The FDA or the applicant may request an amendment to the plan at any time.

The FDA may grant deferrals for submission of data or full or partial waivers on its own initiative or at the request of the applicant. Additional requirements and procedures relating to deferral requests and requests for extension of deferrals are contained in FDASIA. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan designation. Pediatric exclusivity is a type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of marketing protection to the term of any existing regulatory exclusivity. This six-month exclusivity may be granted if a BLA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or patent protection cover the product are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve another application.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the U.S. and for which there is no reasonable expectation that the cost of developing and making available in the U.S. a drug or biologic for this type of disease or condition will be recovered from sales in the U.S. for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. The orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review or approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a full BLA, to market the same biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity. Orphan drug exclusivity does not prevent the FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application user fee.

A designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. In addition, exclusive marketing rights in the U.S. may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Expedited Development and Review Programs

The FDA has a fast track program that is intended to expedite or facilitate the process for reviewing new products that meet certain criteria. Specifically, new products are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Fast track designation applies to the combination of the product and the specific indication for which it is being studied. Unique to a fast track product, the FDA may consider for review sections of the BLA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the BLA, the FDA agrees to accept sections of the BLA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the BLA.

Any product, submitted to the FDA for approval, including a product with a Fast Track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new product designated for priority review in an effort to facilitate the review. The FDA intends to take action on applications under priority within 6 months of the application filing date, compared with 10 months from the filing date for regular applications.

Additionally, a product may be eligible for accelerated approval. Products studied for their safety and effectiveness in treating serious or life-threatening diseases or conditions may receive accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a drug or biological product receiving accelerated approval perform adequate and well-controlled post-marketing clinical studies to demonstrate clinical benefit. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product.

Regenerative Medicine Advanced Therapy (RMAT) designation was established by FDA in 2017 to facilitate an efficient development program for, and expedite review of, any drug that meets the following criteria: (1) it qualifies as a RMAT, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, with limited exceptions; (2) it is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and (3) preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such a disease or condition. RMAT designation provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate and eligibility for rolling review and priority review. Products granted RMAT designation may also be eligible for accelerated approval on the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit, or reliance upon data obtained from a meaningful number of sites, including through expansion to additional sites. Once approved, when appropriate, the FDA can permit fulfillment of post-approval requirements under accelerated approval through the submission of clinical evidence, clinical studies, patient registries, or other sources of real world evidence such as electronic health records; through the collection of larger confirmatory datasets; or through post-approval monitoring of all patients treated with the therapy prior to approval.

Breakthrough therapy designation is also intended to expedite the development and review of products that treat serious or life-threatening conditions. The designation by FDA requires preliminary clinical evidence that a product candidate, alone or in combination with other drugs and biologics, demonstrates substantial improvement over currently available therapy on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. Breakthrough therapy designation comes with all of the benefits of Fast Track designation, which means that the sponsor may file sections of the BLA for review on a rolling basis if certain conditions are satisfied, including an agreement with FDA on the proposed schedule for submission of portions of the application and the payment of applicable user fees before the FDA may initiate a review.

Fast Track designation, priority review, RMAT and breakthrough therapy designation do not change the standards for approval but may expedite the development or approval process. In addition, the FDA may revoke any of these designations if the product no longer meets applicable criteria.

Post-Approval Requirements

Any products for which we receive FDA approvals are subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the product, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, and complying with FDA promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting products for uses or in patient populations that are not described in the product's approved uses (known as "off-label use"), limitations on industry-sponsored scientific and educational activities, and requirements for promotional activities involving the internet. Although a physician may prescribe a legally available product for an off-label use, if the physician deems such product to be appropriate in his/her professional medical judgment, a manufacturer may not market or promote off-label uses. However, it is permissible to share in certain circumstances truthful and not misleading information that is consistent with the product's approved labeling.

In addition, the distribution of prescription drug products, including most biological products that require a prescription, are subject to the Prescription Drug Marketing Act, or the PDMA, which regulates the distribution of drug samples at the federal level, and sets minimum standards for the registration and regulation of drug distributors by the states. Both the PDMA and state laws limit the distribution of prescription drug product samples and impose requirements to ensure accountability in distribution.

Furthermore, quality control and manufacturing procedures must continue to conform to applicable manufacturing requirements after approval to ensure the long-term stability of the product. cGMP regulations require among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer, or holder of an approved BLA, including, among other things, recall or withdrawal of the product from the market. In addition, changes to the manufacturing process are strictly regulated, and depending on the significance of the change, may require prior FDA approval before being implemented. Other types of changes to the approved product, such as adding new indications and claims, are also subject to further FDA review and approval.

The FDA also may require post-marketing testing, known as Phase 4 testing, and surveillance to monitor the effects of an approved product. Discovery of previously unknown problems with a product or the failure to comply with applicable FDA requirements can have negative consequences, including adverse publicity, judicial or administrative enforcement, warning letters from the FDA, mandated corrective advertising or communications with doctors, and civil or criminal penalties, among others. Newly discovered or developed safety or effectiveness data may require changes to a product's approved labeling, including the addition of new warnings and contraindications, and also may require the implementation of other risk management measures. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our products under development.

U.S. Marketing Exclusivity

The Biologics Price Competition and Innovation Act (BPCIA), amended the PHSA to authorize the FDA to approve similar versions of innovative biologics, commonly known as biosimilars. A competitor seeking approval of a biosimilar must file an application to establish that its molecule is highly similar to an approved innovator biologic, notwithstanding minor differences in clinically inactive components, and shows no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, which can generally be shown through analytical studies, animal studies, and a clinical study or studies. Separately, a product that is biosimilar to the reference product is considered interchangeable if the product demonstrates that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the interchangeable biosimilar and the reference biological product may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biological product. A product shown to be biosimilar or interchangeable with an FDA-approved reference biologic which can potentially reduce the cost and time required to obtain approval to market the product. Complexities associated with the larger, and often more complex, structures of biological products, as well as the processes by which such products are manufactured, pose significant hurdles and have slowed implementation of the BPCIA by the FDA.

The BPCIA, however, bars the submission of BLAs for biosimilars to an approved application until four years after the licensure date for the reference biologic. In addition, the FDA may not approve biosimilar applications for 12 years after an innovator biological product receives initial marketing approval. During this 12-year period of reference product exclusivity, another company may obtain FDA licensure and market a competing version of the reference product if the FDA approves a full BLA for the competing product containing that applicant's own preclinical data and data from adequate and well controlled clinical trials to demonstrate the safety, purity and potency of its product. The BPCIA also created certain exclusivity periods for biosimilars approved as

interchangeable products. At this juncture, it is unclear whether products deemed "interchangeable" by the FDA will, in fact, be readily substituted by pharmacies, which are governed by state pharmacy law. This 12-year period of data exclusivity may be extended by six months, for a total of 12.5 years, if the FDA requests, and the innovator company completes pediatric clinical investigations of the product.

The development and, if approved, marketing of biosimilars is subject to user fees under the Biosimilar User Fee Amendments of 2017 (BsUFA), which currently apply through September 2022 and may be renewed or amended thereafter. Sponsors must submit an initial biosimilar biological product development (BPD) fee on the earlier of the submission of an IND or within 5 calendar days of FDA granting a first BPD meeting, and annually thereafter until the sponsor submits a BLA that is accepted for filing, or the sponsor discontinues participation in the BPD program. Sponsors who discontinue participation in the BPD program but want to reengage FDA on product development must also pay a reactivation fee and will be subject to annual BPD fees. Once a sponsor submits a BLA for a biosimilar, they are subject to application fees. And, once a biosimilar BLA is approved, the sponsor is subject to annual program fees. FDA amends the specific fee amounts under BsUFA are amended on an annual basis. BsUFA currently applies through September 2022, and may be renewed or amended thereafter.

The BPCIA is complex and continues to be interpreted and implemented by the FDA. In addition, there has been discussion of whether Congress should reduce the 12-year reference product exclusivity period. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. As a result, the ultimate implementation of the BPCIA is subject to significant uncertainty.

Depending upon the timing, duration and specifics of the FDA approval of the use of our product candidates, some of our U.S. patents, if granted, may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, commonly referred to as the Hatch-Waxman Act. The Hatch-Waxman Act permits a patent restoration term of up to five years, as compensation for patent term lost during product development and the FDA regulatory review process. However, patent term restoration cannot extend the remaining term of a patent beyond a total of 14 years from the product's approval date. The patent term restoration period is generally one-half the time between the effective date of an IND and the submission date of a BLA plus the time between the submission date of a BLA and the approval of that application. Only one patent applicable to an approved product is eligible for the extension and the application for the extension must be submitted prior to the expiration of the patent. The U.S. Patent and Trademark Office, in consultation with the FDA, reviews and approves the application for any patent term extension or restoration. In the future, we may intend to apply for restoration of patent term for one of our currently owned or licensed patents to add patent life beyond its current expiration date, depending on the expected length of the clinical trials and other factors involved in the filing of the relevant BLA.

Reimbursement

In both domestic and foreign markets, sales and reimbursement of any approved products will depend, in part, on the extent to which the costs of such products will be covered by third-party payors, such as government health programs, commercial insurance and managed healthcare organizations. Third-party payors determine which medications they will cover and establish reimbursement levels. 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. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may only be temporary. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the U.S. Coverage and reimbursement policies for drug products can differ significantly from payor to payor as there is no uniform policy of coverage and reimbursement for drug products among third-party payors in the U.S. Third-party payors in the U.S. often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. There may be significant delays in obtaining coverage and reimbursement as the process of determining coverage and reimbursement is often time consuming and costly which will require us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage or adequate reimbursement will be obtained. It is difficult to predict at this time what government authorities and third-party payors will decide with respect to coverage and reimbursement for our drug products.

These third-party payors are increasingly challenging the prices charged for medical products and services and imposing controls to manage costs. The containment of healthcare costs has become a priority of federal and state governments and the prices of drugs have been a focus in this effort. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. 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, reduce the cost of drugs under Medicare, and reform government program reimbursement methodologies for drugs. For example, included in the

Consolidated Appropriations Act of 2021 were several drug price reporting and transparency measures, such as a new requirement for certain Medicare plans to develop tools to display Medicare Part D prescription drug benefit information in real time and for group and health insurance issuers to report information on pharmacy benefit and drug costs to the Secretaries of the Departments of Health and Human Services, Labor and the Treasury. Additionally, on July 9, 2021, President Biden issued an Executive Order to promote competition in the U.S. economy that included several initiatives addressing prescription drugs. Among other provisions, the Executive Order stated that the Biden administration will "support aggressive legislative reforms that would lower prescription drugs, including by allowing Medicare to negotiate drug prices, by imposing inflation caps, and through other related reforms." In response to the Executive Order, on September 9, 2021, the Department of Health and Human Services issued a Comprehensive Plan for Addressing High Drug Prices that identified potential legislative policies and administrative tools that Congress and the agency can pursue in order to make drug prices more affordable and equitable, improve and promote competition throughout the prescription drug industry, and foster scientific innovation. 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. Further, it is possible that additional governmental action is taken in response to the COVID-19 pandemic.

Within the U.S., if we obtain appropriate approval in the future to market any of our product candidates, we may seek approval and coverage for those products under Medicaid, Medicare and the Public Health Service (PHS), pharmaceutical pricing program and also seek to sell the products to federal agencies.

Medicaid is a joint federal and state program that is administered by the states for low income and disabled beneficiaries. Under the Medicaid Drug Rebate Program, manufacturers are required to pay a rebate for each unit of a covered outpatient drug reimbursed by the state Medicaid programs. The amount of the rebate for each product is set by law and may be subject to an additional discount if certain pricing increases more than inflation.

Medicare is a federal program administered by the federal government that covers individuals age 65 and over as well as those with certain disabilities. Medicare Part D provides coverage to enrolled Medicare patients for self-administered, outpatient drugs (i.e., drugs typically dispensed by a pharmacy and that do not need to be administered by a physician). Medicare Part D is administered by private prescription drug plans approved by the U.S. government and each drug plan establishes its own Medicare Part D formulary for prescription drug coverage and pricing, subject to CMS rules and requirements, which the drug plan may modify from time-to-time.

Medicare Part B covers most injectable drugs given in an in-patient setting, and some drugs administered by a licensed medical provider in hospital outpatient departments and doctors' offices. Medicare Part B is administered by Medicare Administrative Contractors, which generally have the responsibility of making coverage decisions in accordance with CMS rules and requirements. Subject to certain payment adjustments and limits, Medicare generally pays for Part B covered drugs based on a percentage of manufacturer-reported average sales price.

Drug products are subject to discounted pricing when purchased by federal agencies via the Federal Supply Schedule (FSS). FSS participation is required for a drug product to be covered and paid for by certain federal agencies and for coverage under Medicaid, Medicare Part B and the PHS pharmaceutical pricing program, commonly referred to as the 340B Drug Pricing Program. FSS pricing is negotiated periodically with the Department of Veterans Affairs. FSS pricing is intended to not exceed the price that a manufacturer charges its most-favored non-federal customer for its product. In addition, prices for drugs purchased by the Veterans Administration, Department of Defense (including drugs purchased by military personnel and dependents through the TRICARE retail pharmacy program), Coast Guard, and PHS are subject to a cap on pricing (known as the "federal ceiling price") and may be subject to an additional discount if pricing increases more than inflation.

To maintain coverage of drugs under the Medicaid Drug Rebate Program, manufacturers are required to extend discounts to certain purchasers under the PHS pharmaceutical pricing program. Purchasers eligible for discounts include hospitals that serve a disproportionate share of financially needy patients, community health clinics and other entities that receive health services grants from the PHS.

In March 2010, the U.S. Congress enacted the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, the Affordable Care Act), which included changes to the coverage and payment for drug products under government health care programs. 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, former President Trump signed Executive Orders designed to eliminate 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 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 2019, the U.S. Court of Appeals for the 5th Circuit upheld a District Court ruling that the individual mandate was unconstitutional and remanded the case back to the Texas District Court to determine whether the remaining provisions of the Affordable Care Act are invalid as well. The U.S. Supreme Court granted certiorari on March 2, 2020 and heard oral arguments on November 10, 2020. On June 17, 2021, the U.S. Supreme Court dismissed the lawsuit without ruling on the merits of the states' constitutionality arguments. On January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through August 15, 2021 for purposes of obtaining health insurance coverage through the Affordable Care Act marketplace. The executive order also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the Affordable Care Act. It is unclear how the healthcare reform measures of the Biden administration and any future litigation will impact the Affordable Care Act and our business.

U.S. Health Care Laws

Healthcare providers 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 biopharmaceutical company, even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. Restrictions under applicable federal and state healthcare laws and regulations that may affect our ability to operate include the following:

- the federal healthcare Anti-Kickback Statute, which, for example, governs our marketing practices, educational programs, pricing policies, and relationships with healthcare providers or other entities, by prohibiting, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under a federal healthcare program such as Medicare and Medicaid;
- federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws that impose criminal and civil penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment or approval that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government; the FDCA and PHSA, which prohibit the misbranding and adulteration of biological products that are regulated as drugs, and which regulate the marketing of biological products;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), which imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and also created federal criminal laws that prohibit knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statements in connection with the delivery of or payment for healthcare benefits, items or services;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (HITECH), which also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information held by covered entities and their business associates and their subcontractors that use, disclose or otherwise process individually identifiable health information as well as their covered subcontractors;
- the federal Physician Payments Sunshine Act, implemented as the Open Payments Program, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to CMS information related to payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations. Beginning in 2022, applicable manufacturers are also required to report information regarding payments and transfers of value provided to physician assistants, nurse practitioners, clinical nurse specialists, anesthesiologist assistants, certified registered nurse anesthetists and certified nurse midwives;
- 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, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers;

- state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; including those that 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 as well as those that require the registration of pharmaceutical sales representatives. Some state laws require the protection of the privacy and security of health information in a manner that may differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts. For example, California enacted the California Consumer Privacy Act (CCPA), effective January 1, 2020, and the California Privacy Rights Act of 2020 (CPRA) was recently approved by California voters; and
- similar healthcare and privacy laws and regulations in the European Economic Area (EEA), the UK and other jurisdictions, such as, the General Data Protection Regulation (EU) 2016/679 (GDPR), which imposes obligations and restrictions on the collection and use of personal information relating to individuals located in the EEA (including health information).

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.

Foreign Regulation

In addition to regulations in the U.S., we are subject to a variety of foreign regulations governing clinical studies and commercial sales and distribution of our product candidates. Whether or not we obtain FDA approval for a product candidate, we must obtain approval from the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before we may commence clinical studies or market products in those countries or areas. The approval process and requirements governing the conduct of clinical studies, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Certain countries outside of the U.S. have a process that requires the submission of a CTA, which is much like an IND in the U.S., prior to the commencement of human clinical studies. In the EU, for example, in accordance with the requirements of the EU Clinical Trials Directive, as implemented in national law by Member States, a CTA must be submitted to the competent national health authority and to independent ethics committees in each country in which a company intends to conduct clinical studies. Once the CTA is approved in accordance with a country's requirements, clinical study development may proceed in that country. In all cases, the clinical studies must be conducted in accordance with GCP and other applicable regulatory requirements. In 2014, a new Clinical Trials Regulation 536/2014, replacing the current directive, was adopted. The new Regulation will become directly applicable in all EU Member States (without national implementation) once the EU Portal and Database are fully functional. It is expected that the Regulation will apply in late 2021. The new Regulation seeks to simplify and streamline the approval of clinical trials in the European Union. For example, the sponsor shall submit a single application for approval of a clinical trial via the EU Portal. As part of the application process, the sponsor shall propose a reporting Member State, who will coordinate the validation and evaluation of the application. The reporting Member State shall consult and coordinate with the other concerned Member States. If an approval is issued, the sponsor can start the clinical trial in all concerned Member States. However, a concerned Member State can in limited circumstances declare an "opt-out" from an approval. In such a case, the clinical trial cannot be conducted in that Member State. The Regulation also aims to streamline and simplify the rules on safety reporting and introduces enhanced transparency requirements such as mandatory submission of a summary of the clinical trial results to the EU Database.

Under EU regulatory systems, a company may submit marketing authorization applications under centralized or decentralized, or mutual-recognition procedures. We expect to utilize the centralized procedure, which is compulsory for medicinal products produced by biotechnology or those medicinal products containing new active substances for specific indications such as the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, viral diseases and designated orphan medicines, and optional for other medicines which are highly innovative. Under the centralized procedure, a marketing application is submitted to the EMA, where it will be evaluated by the Committee for Medicinal Products for Human Use. If this committee delivers a favorable opinion, this typically results in the grant by the European Commission of a single marketing authorization that is valid for all EU member states within 67 days of receipt of the opinion. The initial marketing authorization is valid for five years, but once renewed is usually valid for an unlimited period. Conditional marketing authorization in the European Union is permitted based on incomplete clinical data for a limited number of medicinal products for human use, including products designated as orphan medicinal products under EU law, if (1) the risk-benefit balance of the product is positive, (2) it is likely that the applicant will be in a position to provide the required comprehensive clinical study data, (3) unmet medical needs will be fulfilled and (4) the benefit to public health of the immediate availability on the market of the medicinal product outweighs the risk inherent in the fact that additional data are still required. Specific obligations, including with respect to the completion of ongoing or new studies, and with respect to the collection of pharmacovigilance data, may be specified in the conditional marketing authorization. Conditional marketing

authorizations are valid for one year and may be renewed annually, if the risk-benefit balance remains positive, and after an assessment of the need for additional or modified conditions.

As in the U.S., we may apply for designation of a product as an orphan drug for the treatment of a specific indication in the European Union before the application for marketing authorization is made. Orphan drugs in Europe enjoy economic and marketing benefits, including up to 11 years of exclusivity for the approved indication unless another applicant can show that its product is safer, more effective or otherwise clinically superior to the orphan-designated product. The PRIME initiative was established by the EMA to help promote and foster the development of new medicines in the European Union that demonstrate potential for a major therapeutic advantage in areas of unmet medical need. Benefits from the PRIME designation include early confirmation of potential for accelerated assessment, early dialogue and increased interaction with relevant regulatory committees to discuss development options, scientific advice at key development milestones, and proactive regulatory support from the EMA.

In the EU, companies developing a new medicinal product must agree to a PIP with the EMA and must conduct pediatric clinical trials in accordance with that PIP, unless a deferral or waiver applies, (e.g., because the relevant disease or condition occurs only in adults). The marketing authorization application for the product must include the results of pediatric clinical trials conducted in accordance with the PIP, unless a waiver applies, or a deferral has been granted, in which case the pediatric clinical trials must be completed at a later date. Products that are granted a marketing authorization on the basis of the pediatric clinical trials conducted in accordance with the PIP are eligible for a six month extension of the protection under a supplementary protection certificate (if any is in effect at the time of approval) or, in the case of orphan medicinal products, a two year extension of the orphan market exclusivity. This pediatric reward is subject to specific conditions and is not automatically available when data in compliance with the PIP are developed and submitted.

Outside the U.S., there are additional challenges in ensuring adequate coverage and payment for our products. Pricing of prescription pharmaceuticals is subject to governmental control in many countries. Pricing negotiations with governmental authorities can extend well beyond the receipt of regulatory approval for a product and may require us to conduct a clinical study that compares the cost effectiveness of our product candidates or products to other available therapies. The conduct of this type of clinical study could be expensive and result in delays in our commercialization efforts. Third-party payors are challenging the prices charged for medical products and services, and many third-party payors limit reimbursement for newly-approved health care products. Budgetary pressures in many European Union countries are also causing governments to consider or implement various cost-containment measures, such as price freezes, increased price cuts and rebates. If budget pressures continue, governments may implement additional cost-containment measures. Cost-control initiatives could decrease the price we might establish for products that we may develop or sell, which would result in lower product revenues or royalties payable to us. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products.

Brexit and the Regulatory Framework in the United Kingdom

Following the result of a referendum in 2016, the United Kingdom left the EU on January 31, 2020, commonly referred to as Brexit. Pursuant to the formal withdrawal arrangements agreed between the United Kingdom and the EU, the United Kingdom was subject to a transition period until December 31, 2020 (the Transition Period) during which EU rules continued to apply. A UK-EU Trade and Cooperation Deal (the Deal) that outlines the future trading relationship between the United Kingdom and the European Union was agreed in December 2020 and has been approved by each EU member state and the United Kingdom.

Since a significant proportion of the regulatory framework in the United Kingdom applicable to our business and our product candidates is derived from EU directives and regulations, Brexit has had, and will continue to have, a material impact upon the regulatory regime with respect to the development, manufacture, importation, approval and commercialization of our product candidates in the United Kingdom and the EU. Great Britain (made up of England, Scotland and Wales) is no longer covered by the EEA's procedures for the grant of marketing authorizations (Northern Ireland will be covered by the centralized authorization procedure and can be covered under the decentralized or mutual recognition procedures). A separate marketing authorization will be required to market drugs in Great Britain. It is currently unclear whether the Medical Healthcare products Regulatory Agency (MHRA) in the United Kingdom is sufficiently prepared to handle the increased volume of marketing authorization applications that it is likely to receive. Any delay in obtaining, or an inability to obtain, any marketing approvals, would delay or prevent us from commercializing our product candidates in the United Kingdom or the EU and restrict our ability to generate revenue and achieve and sustain profitability.

While the Deal provides for the tariff-free trade of medicinal products between the United Kingdom and the EU there may be additional non-tariff costs to such trade which did not exist prior to the end of the Transition Period. Further, should the United Kingdom diverge from the EU from a regulatory perspective in relation to medicinal products, tariffs could be put into place in the future. We could therefore, both now and in the future, face significant additional expenses (when compared to the position prior to the end of the Transition Period) to operate our business, which could significantly and materially harm or delay our ability to generate

revenues or achieve profitability of our business. Any further changes in international trade, tariff and import/export regulations as a result of Brexit or otherwise may impose unexpected duty costs or other non-tariff barriers on us. These developments, or the perception that any of them could occur, may significantly reduce global trade and, in particular, trade between the impacted nations and the United Kingdom. It is also possible that Brexit may negatively affect our ability to attract and retain employees, particularly those from the EU.

Orphan designation in Great Britain following Brexit is granted on an essentially identical basis to in the EU, but is based on the prevalence of the condition in Great Britain. It is therefore possible that conditions that are currently designated as orphan conditions in Great Britain will no longer be and that conditions that are not currently designated as orphan conditions in the EU will be designated as such in Great Britain.

Additional Regulation

As a biopharmaceutical 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. We are also subject to regulation under the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and other present and potential federal, state or local regulations. These and other laws govern our use, handling and disposal of various biological and chemical substances used in, and waste generated by, our operations. Our research and development involves the controlled use of hazardous materials, chemicals and viruses. Although we believe that our safety procedures for handling and disposing of such materials comply with the standards prescribed by state and federal regulations, the risk of accidental contamination or injury from these materials cannot be completely eliminated. In the event of such an accident, we could be held liable for any damages that result and any such liability could exceed our resources.

Manufacturing

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

We continue to scale our EBV T-cell manufacturing platform to improve product yields from a single donor leukapheresis collection and have generated data confirming the use of stirred-tank bioreactors to improve yield and cell growth productivity. We believe our scalable technology can potentially be a key enabler to deliver biologic-like cost of goods manufactured and could be leveraged across our portfolio, including our CAR T programs. There have been transient interruptions in the supply of raw materials and consumables used in the development and manufacturing of our preclinical and clinical cell therapies related to the COVID-19 pandemic, including leukapheresis collections, which supply raw materials used for our product candidates. If we are unable to obtain such raw materials or other necessary raw materials in a timely manner, our business operations and manufacturing capabilities could be adversely affected.

In addition to our manufacturing facility in Thousand Oaks, California, we also work withCognate BioServices, Inc. (Cognate) pursuant to a Commercial Manufacturing Services Agreement (the Manufacturing Agreement) that we entered into in December 2019. Pursuant to the Manufacturing Agreement, Cognate provides manufacturing services for certain of our product candidates. The initial term of the Manufacturing Agreement, as amended, runs until May 31, 2022. We may terminate the Manufacturing Agreement for convenience on six months' written notice to Cognate, or immediately if Cognate is unable to perform the services under the Manufacturing Agreement or fails to obtain or maintain certain necessary approvals. In March 2021, Charles River Laboratories Inc. (CRL) acquired Cognate.

Our current manufacturing strategy is to evaluate each product candidate and determine which site in our manufacturing network provides the phase-appropriate technical, quality and regulatory compliance requirements. In addition, the long-range supply requirements of our product candidates are evaluated periodically to ensure we are planning manufacturing capacity and capabilities accordingly across our network. Our manufacturing network is comprised of our own facility and the manufacturing capabilities of our partners, including MSK and an affiliate of QIMR Berghofer, and contract manufacturing organizations (CMOs), including Cognate. This strategic approach provides us with the flexibility to support our clinical and commercial production needs, address time or capacity constraints as well as provide supply redundancy, where appropriate.

Our T-cell product candidates require blood-derived starting materials which are received from healthy, consenting third-party donors through FDA- and EMA-compliant collection centers. Our manufacturing operations are conducted under Code of Federal Regulations Good Manufacturing Practices (GMPs), as well as Good Tissue Practices (GTPs). GTPs are FDA regulations and guidance documents that govern the methods used in, and the facilities and controls used for, the manufacture of HCT/Ps, which are human cells or tissue intended for implantation, transplant, infusion or transfer into a human recipient. The primary intent of the GTP requirements is to ensure that cell and tissue-based products are manufactured in a manner designed to prevent the introduction, transmission and spread of communicable disease. FDA regulations also require tissue establishments to register and list their HCT/Ps with the FDA and, when applicable, to evaluate donors through screening and testing.

Through agreements with our partners, we have acquired the right to use certain manufacturing process know-how related to producing clinical research-related drug supply. These include materials to support the manufacturing of clinical study material, including key starting materials and intermediates as well as existing inventory of clinical study materials. We also have the ability to obtain supply from third parties to ensure we have the necessary starting materials donated from healthy consenting third-party donors.

Human Capital Management

As of December 31, 2021, we had 578 employees. We believe that the success of our business will depend, in part, on our ability to attract and retain qualified personnel. Our human capital strategy is designed to enable successful execution of our business objectives, while fostering a collaborative and innovative culture, that embraces diversity and inclusion. We monitor our success with insights across human capital metrics such as employee engagement, vacancy rates, time to hire, promotion rates, performance ratings, succession depth, retention, EEO compliance, pay equity, and diversity representation. The principal purposes of our compensation policies and equity incentive plans are to attract, retain and motivate employees and directors by paying for performance through the granting of stock-based compensation awards and cash-based performance bonus awards. None of our employees are represented by a labor union or are a party to a collective bargaining agreement and we consider our relations with our employees to be good.

COVID-19 Business Update

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

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

To date, the COVID-19 pandemic has not materially impacted our or our partners' clinical, research and development, regulatory and manufacturing operations or timelines. However, at the onset of the COVID 19 pandemic, we experienced some transient delays in clinical study operations, and may again experience delays associated with the pandemic in the future. we experienced, and depending on the evolving impacts of the ongoing COVID-19 pandemic, we may again experience, some transient delays in clinical study operations, as a result COVID-19.

The full extent to which the COVID-19 pandemic may impact our business and operations is subject to future developments which are uncertain and difficult to predict. We continue to monitor the impact of the COVID-19 pandemic on our business and operations and will seek to adjust our activities as appropriate.

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

Corporate Information

We were incorporated in Delaware in 2012. Our principal corporate offices are located at 611 Gateway Blvd., Suite 900, South San Francisco, California 94080 and our telephone number at that address is (650) 278-8930. Our website address is www.atarabio.com.

Available Information

We file Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statements and other materials with the Securities and Exchange Commission (SEC). We make these reports available free of charge through our website as soon as reasonably practicable after we electronically file such reports with, or furnish such reports to, the SEC. The information contained on, or that can be accessed through, our website is not a part of or incorporated by reference in this Annual Report on Form 10-K or in any other filings we make with the SEC.

The SEC also maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at www.sec.gov.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. Investors should carefully consider all of the risk factors and uncertainties described below, in addition to the other information contained in this Annual Report on Form 10-K, including the section of this report titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated 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 securities 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 product candidates will fail to prove effective, gain regulatory approval or become commercially viable. We do not have any products approved by regulatory authorities and have not generated any revenues from product sales, 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 year ended December 31, 2021, we reported a net loss of $340.1 million.

We do not expect to generate product revenues in the near 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. If we commercialize tab-cel® in the US, subject to submission and approval of a BLA filing for tab-cel® by the FDA, we would need to transition 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 approved products and thus have no product revenues. We may never generate revenues from the sale of products or achieve profitability.

To date, we have not generated any revenues from product sales. Even if we are able to successfully achieve regulatory approval for our product candidates, we do not know when we will generate revenues from product sales 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 from the sale of products and achieve profitability also depends on a number of additional factors, including our ability to:

- successfully complete development activities, including the necessary clinical studies with positive results;
- complete and submit regulatory submissions to the FDA, EMA or other agencies and obtain regulatory approval for indications for which there is a commercial market;
- obtain coverage and adequate reimbursement from third parties, including government and private payors;
- set commercially viable prices for our products, if any;
- develop manufacturing and distribution processes for our novel T-cell immunotherapy product candidates;
- develop commercial quantities of our products at acceptable cost levels;
- establish and maintain adequate supply of our products, including cell lines with sufficient breadth to treat patients;
- establish and maintain manufacturing relationships with reliable third parties or qualify our manufacturing facility such that we can maintain the supply of our products by ensuring adequate, manufacturing of bulk drug substances and drug products in a manner that is compliant with global legal requirements;
- achieve market acceptance of our products, if any;
- attract, hire and retain qualified personnel;
- protect our rights in our intellectual property portfolio;
- develop a commercial organization capable of sales, marketing and distribution for any products we intend to sell ourselves in the markets in which we choose to commercialize on our own; and
- find suitable distribution partners to help us market, sell and distribute our approved products in other markets.

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

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

We expect to expend substantial resources for the foreseeable future to continue the clinical development and manufacturing of our T-cell immunotherapy product candidates, and the advancement and expansion of our preclinical research pipeline. We also expect to continue to expend resources for the development and manufacturing of product candidates and the technology we have licensed or have an exclusive right to license from our partners. These expenditures will include costs associated with research and development, potentially acquiring or licensing new product candidates or technologies, conducting preclinical and clinical studies and potentially obtaining regulatory approvals and manufacturing products, as well as marketing and selling products approved for sale, if any. Under the terms of our license agreements with each of our in-license 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 or contracting for the manufacture of 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 expect that existing cash, cash equivalents and short-term investments as of December 31, 2021, together with the anticipated $100.0 million from FUJIFILM Diosynth Biotechnologies California Inc. (FDB), payable upon closing of the strategic transaction with FDB, will be sufficient to fund our planned operations into the fourth quarter of 2023. See Note 12 – Subsequent Events for further information. As of December 31, 2021, we had total cash, cash equivalents and short-term investments of $371.1 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.

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

Risks Related to the Development of Our Product Candidates

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

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

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

Our business could be adversely affected by health epidemics and pandemics, including the ongoing COVID-19 pandemic, which has presented a substantial public health and economic challenge around the world and has affected, and continues to affect, our employees, patients, communities and business operations, as well as the U.S. economy and financial markets. As a result of the ongoing COVID-19 pandemic, the work-from-home model we implemented in March 2020 for most of our employees remains in place. We continue to maintain essential in-person manufacturing and laboratory functions in order to advance key research, development and manufacturing priorities. In connection with these measures, we may be subject to claims based upon, arising out of, or related to COVID-19 and our actions and responses thereto, including any determinations that we may make to continue to operate or to re-open our offices and facilities where permitted by applicable law. The effects of current and potential future state executive orders, local shelter-in-place orders, government-imposed quarantines, our work-from-home policies and potential return-to-office strategy and other similar actions may negatively impact productivity, disrupt our business and delay our clinical programs and timelines, the magnitude of which will depend, in part, on the length and severity of the restrictions and other limitations on our ability to conduct our business in the ordinary course.

Further quarantines, shelter-in-place or similar restrictions and other actions taken by foreign, federal, state and local governments, or the perception that such orders, shutdowns or other restrictions on the conduct of business operations could occur or could be reinstated, related to the ongoing COVID-19 pandemic or other infectious diseases, could impact our manufacturing capabilities and third-party manufacturing facilities in the United States and other countries, or the availability or cost of materials, which would disrupt our supply chain. In particular, standard transportation channels have been impacted and we and other manufacturing, testing, product disposition, contract manufacturing organizations (CMOs) and external testing laboratories are subject to enhanced risk assessment and mitigation measures. In addition, there have been and may continue to be interruptions in the supply of leukapheresis collections, which supply raw materials used in our products.

Our clinical trials may also be affected by health epidemics and have been affected by the ongoing and evolving COVID-19 pandemic. Clinical site initiation and patient enrollment have experienced delays as a result of the COVID-19 pandemic, including due to the prioritization of hospital resources toward COVID-19 and away from clinical trials or as a result of changing practice patterns that impact the diseases our trials address. Some patients may not be able to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services or if patients contract COVID-19 or are forced to quarantine. For example, while most clinical trial sites for our studies, including our Phase 3 clinical trial of tab-cel® in patients with EBV+ PTLD, remain open to enrollment for patients, some sites have limited the screening and enrollment of new patients due to governmental orders related to COVID-19, or fear of infection of COVID-19, have limited, and may continue to limit, patients' abilities to access clinical sites. COVID-19-related travel restrictions may also interrupt key clinical trial activities, such as clinical trial site data monitoring and efficacy, safety and translational data collection, processing and analyses. At the outset of the COVID-19 pandemic, we observed a temporary slow-down in stem cell and solid organ transplant volumes, which may have decreased the eligible patient population for the tab-cel® Phase 3 study. In April 2020, we initiated a temporary pause in the screening and enrollment of patients in our EMBOLD study of ATA188 in patients with PMS. Although we were able to resume the screening and enrollment of patients in our EMBOLD study and enrolled the first patient in the study in June 2020, the ongoing COVID-19 pandemic may require us to institute another pause in the screening and enrollment of patients in our EMBOLD study. Similarly, our ability to recruit and retain principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19, may be adversely impacted.

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

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

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

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

The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable but typically takes many years following the commencement of preclinical and clinical studies and depends upon numerous factors, including the substantial discretion of the regulatory authorities. The novel nature of our product candidates may create further challenges in obtaining regulatory approval. For example, the FDA and comparable foreign regulatory authorities have limited experience with regulating the development and commercialization of T-cell immunotherapies, particularly allogeneic T-cell product candidates, and CAR T therapies, including assessing the comparability of different versions of such product candidates. In addition, approval policies, regulations, regulatory positions or the type and amount of clinical and other data necessary to gain approval may change during the course of a product candidate's clinical development and throughout regulatory interactions, and may vary among jurisdictions, particularly for novel therapies. 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 sites to conduct the study in accordance with applicable regulatory requirements;
- 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;
- inability to reach agreement with the FDA or comparable foreign regulatory authorities on the methodologies for, and assessment of, comparability of different versions of product candidates used in non-pivotal studies, pivotal studies and for intended commercial use;
- 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 or inconsistencies in the requested or required methodologies, statistical analyses, specification criteria or regulatory submission requirements for a product candidate, including changes to, or inconsistencies with, applicable industry practice or precedent; or
- changes in the: (i) approval policies or regulations that render our preclinical and clinical data insufficient for approval; or (ii) positions, guidance or feedback communicated by the FDA or comparable foreign regulatory authorities.

The FDA or a comparable foreign regulatory authority may require more information, including additional CMC information, 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. For example, at a Type B meeting in February 2022, we were not able to align with the FDA on comparability between product used for in the pivotal ALLELE study and the intended commercial product. The FDA's preliminary feedback recommended we conduct a new clinical trial with the commercial product to address the lack of alignment on comparability. While we intend to continue explore alternative pathways with the FDA to enable filing of a BLA for tab-cel® based on data from the pivotal ALLELE study, if we are unable to establish comparability to the FDA's satisfaction or otherwise reach agreement with the FDA on a pathway to BLA submission, we will be required to perform additional clinical trials prior to submitting the BLA for tab-cel®, which would result in considerable delay to a BLA submission The requirement to conduct an additional clinical trial could lead us not to pursue a BLA submission. Conducting a clinical trial may prove too difficult or too expensive, and the process of designing a clinical trial, enrolling enough patients, and completing treatment and data collection under the protocol could take a significant amount of time, effort, and resources. Even if we complete the clinical trial, the study may not meet its prespecified endpoints, and even if it does, the FDA may still disagree with our determination that the clinical trial is sufficient to support submission and approval of a BLA for tab-cel®. In addition, 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' Kymriah® and Gilead's Yescarta®, may not be indicative of what these regulators may require for approval of our therapies. We have multiple clinical trials of our product candidates currently ongoing. If an adverse safety issue, clinical hold or other adverse finding occurs in one or more of our clinical trials, such event could adversely affect our other clinical trials of the same or related product candidates. Moreover, our product candidates may not perform successfully in clinical studies or may be associated with adverse events that distinguish them from those that have previously been approved, such as existing autologous CAR T therapies. For instance, allogeneic product candidates may result in adverse events not experienced with autologous products.

Our development and commercialization activities could be harmed or delayed by governmental or regulatory delays due to limitations on the availability of governmental and regulatory agency personnel to review regulatory filings or engage with us, caused by global health concerns, including the ongoing and evolving COVID-19 pandemic, changes to governmental regulatory requirements, policies, guidelines or priorities, reallocation, or availability of government resources, or for other reasons, which may significantly delay the FDA's, or other regulatory agency, ability to review and process any submissions we have filed or may file or cause other regulatory delays. If global health concerns continue to prevent the FDA or other regulatory authorities from conducting their regular inspections, or impact reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business. For example, in response to the COVID-19 pandemic, on March 10, 2020, the FDA announced its intention to postpone

most inspections of foreign manufacturing facilities and products inspections of domestic manufacturing facilities through April 2020. On March 18, 2020, the FDA announced its intention to temporarily postpone routine surveillance inspections of domestic manufacturing facilities and provided guidance regarding the conduct of clinical trials. On July 10, 2020, the FDA announced that it is working toward the goal of restarting on-site inspections it deems to be "mission critical." In May 2021, the FDA updated its guidance, first published in August 2020, clarifying how it intends to conduct inspections during the COVID-19 pandemic, including how it plans to determine which inspections are "mission critical." Additionally, on April 14, 2021, the FDA issued a guidance document in which the FDA described its plans to conduct voluntary remote interactive evaluations of certain drug manufacturing facilities and clinical research sites. According to the guidance, the FDA intends to request such remote interactive evaluations in situations where an in-person inspection would not be prioritized, deemed mission-critical, or where direct inspection is otherwise limited by travel restrictions, but where the FDA determines that remote evaluation would still be appropriate. The FDA intends to use this risk-based assessment system to identify the categories of regulatory activity that can occur within a given geographic area, ranging from mission critical inspections to resumption of all regulatory activities. Regulatory authorities outside the United States may adopt similar restrictions or other policy measures in response to the COVID-19 pandemic. It is unclear how FDA's and other health agencies' policies and guidance will impact any inspections of our facilities, including our clinical trial sites.

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

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

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

- obtaining regulatory approval from the FDA and other regulatory authorities, which have limited experience with regulating the development and commercialization of T-cell immunotherapies, particularly allogeneic T-cell product candidates;
- developing and deploying consistent and reliable processes for procuring blood from consenting third-party donors, isolating T cells from the blood of such donors, activating the isolated T cells against a specific antigen, characterizing and storing the resulting activated T cells for future therapeutic use, selecting and delivering a sufficient supply and breadth of appropriate partially HLA-matched cell line from among the available T-cell lines, and finally infusing these activated T cells into patients;
- utilizing these product candidates in combination with other therapies (e.g., immunomodulatory approaches such as checkpoint inhibitors), which may increase the risk of adverse side effects;
- educating medical personnel regarding the potential side effect profile of each of our product candidates, particularly those that may be unique to our allogeneic T-cell product candidates and to our next-generation CAR T programs;
- understanding and addressing variability in the quality of a donor's T cells, which could ultimately affect our ability to manufacture product in a reliable and consistent manner;
- developing processes for the safe administration of these products, including long-term follow-up and registries, for all patients who receive these product candidates;
- establishing or making arrangements with third-party manufacturers to manufacture, or manufacturing on our own, product candidates to our specifications and in a timely manner to support our clinical studies and, if approved, commercialization;
- sourcing clinical and, if approved by applicable regulatory authorities, commercial supplies for the materials used to manufacture and process these product candidates that are free from viruses and other pathogens that may increase the risk of adverse side effects;
- developing a manufacturing process and distribution network that can provide a stable supply with a cost of goods that allows for an attractive return on investment;

- establishing sales and marketing capabilities ahead of and after obtaining any regulatory approval to gain market acceptance, and obtaining adequate coverage, reimbursement and pricing by third-party payors and government authorities; and
- developing therapies for types of diseases beyond those initially addressed by our current product candidates.

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

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

Physicians, hospitals and third-party payors often are slow to utilize new products, technologies and treatment practices that require additional upfront costs and training. Physicians may not be willing to undergo training on 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, there can be significant variability in safety and efficacy results between different clinical trials of the same product candidate due to numerous factors, we do not know whether the clinical studies we may conduct, or clinical studies in progress, will demonstrate adequate efficacy and safety to result in regulatory approval to market tab-cel®, ATA188, any product candidates resulting from our next-generation CAR T programs or any of our other product candidates in any particular jurisdiction.

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

For regulatory approvals of tab-cel®, we plan on using independent radiologist and/or oncologist assessment of responses which may not correlate with the investigator-reported assessments. In addition, the Phase 2 clinical studies with tab-cel® enrolled a heterogeneous group of patients with a variety of EBV-driven 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.

Moreover, final study results may not be consistent with interim study results. Efficacy data from prospectively designed studies may differ significantly from those obtained from retrospective subgroup analyses. In addition, clinical data obtained from a clinical study with an allogeneic product candidate may not yield the same or better results as compared to an autologous product candidate. If

later-stage clinical studies do not produce favorable results, our ability to achieve regulatory approval for any of our product candidates may be adversely impacted. Even if we believe that we have adequate data to support an application for regulatory approval to market any of our product candidates, the FDA or other regulatory authorities may not agree and may require that we conduct additional clinical studies.

Interim "top line" and preliminary data from clinical studies that we or our partners may announce or share with regulatory authorities from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we or our partners may announce or share with regulatory authorities interim "top line" or preliminary data from clinical studies. Interim data from completed clinical studies are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Preliminary or "top line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data previously announced. As a result, interim and preliminary data should be viewed with caution until the final data are available. Adverse differences between preliminary or interim data and final data could impact the regulatory approval of, and significantly harm the prospects of any product candidate that is impacted by the applicable data.

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

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

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

- delays in enrollment due to travel, shelter-in-place or quarantine policies, or other factors, related to the ongoing COVID-19 pandemic or other epidemics or pandemics;
- delay or failure in reaching agreement with the FDA or a comparable foreign regulatory authority on a study design that we are able to execute;
- delay or failure in obtaining authorization to commence a study or inability to comply with conditions imposed by a regulatory authority regarding the scope or design of a study;
- delay or failure in reaching agreement on acceptable terms with prospective contract research organizations (CROs) and clinical study sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and study sites;
- delay or failure in obtaining institutional review board (IRB) approval or the approval of other reviewing entities, including comparable foreign regulatory authorities, to conduct a clinical study at each site;
- withdrawal of clinical study sites from our clinical studies or the ineligibility of a site to participate in our clinical studies;
- delay or failure in recruiting and enrolling eligible subjects to participate in a study;
- delay or failure in subjects completing a study or returning for post-treatment follow-up;
- clinical sites and investigators deviating from study protocol, failing to conduct the study in accordance with regulatory requirements, or dropping out of a study;
- an FDA or other regulatory authority clinical site inspection reveals serious violations of regulations applicable to clinical investigations, which may result in requests for additional data analyses and/or rejection of data deemed unreliable;
- inability to identify and maintain a sufficient number of study sites, including because potential study sites may already be engaged in competing clinical study programs enrolling the same population;
- failure of our third-party clinical study managers to satisfy their contractual duties, meet expected deadlines or return trustworthy data;
- delay or failure in adding new study sites;
- interim results or data that are ambiguous or negative or are inconsistent with earlier results or data;

- feedback from the FDA, the IRB, data safety monitoring boards or comparable foreign authorities, or results from earlier stage or concurrent preclinical and clinical studies, that might require modification to the protocol for a study;
- a decision by the FDA, the IRB, comparable foreign authorities, or us, or a recommendation by a data safety monitoring board or comparable foreign authority, to suspend or terminate clinical studies at any time for non-compliance with regulatory requirements, safety issues, including a finding that our product candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risk, or for any other reason;
- unacceptable benefit/risk profile, unforeseen safety issues or adverse side effects;
- failure to demonstrate a benefit from using a product candidate;
- difficulties in manufacturing or obtaining from third parties sufficient quantities and breadth of appropriate partially HLA matched cell lines from among the available T-cell lines to start or to use in clinical studies;
- lack of adequate funding to continue a study, including the incurrence of unforeseen costs due to enrollment delays, requirements to conduct additional studies or increased expenses associated with the services of our CROs and other third parties; or
- changes in governmental regulations or administrative actions or lack of adequate funding to continue a clinical study.

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

- the size and nature of the patient population;
- the possibility that the rare diseases that many of our product candidates address are under-diagnosed;
- changing medical practice patterns or guidelines related to the diseases or conditions we are investigating;
- the severity of the disease under investigation, our ability to open clinical study sites;
- the proximity of subjects to clinical sites;
- the patient referral practices of physicians;
- the design and eligibility criteria of the clinical study;
- ability to obtain and maintain patient consents;
- risk that enrolled subjects will drop out or die before completion;
- competition for patients from other clinical studies;
- our or our partner's ability to manufacture the requisite materials for a study;
- risk that we do not have appropriately matched HLA cell lines;
- clinicians' and patients' perceptions as to the potential advantages and risks of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the diseases or conditions we are investigating; and
- disruptions caused by man-made or natural disasters or public health pandemics or epidemics, including, for example, the ongoing COVID-19 pandemic.

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

We rely on CROs, other vendors and clinical study sites to ensure the proper and timely conduct of our clinical studies, and while we have agreements governing their committed activities, we have limited influence over their actual performance. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. Reliance on CROs entails risks to which we would not be subject if we conducted our clinical studies ourselves, including reliance on the CRO for clinical site initiation and monitoring, the possibility that the CRO does not maintain the financial resources to meet its obligations under our agreements, the possibility of breach of these agreements by the CRO because of factors beyond our control, including a failure to properly perform their obligations under these agreements, and the possibility of termination or nonrenewal of the agreements by the CROs, based on their own business priorities, at a time that is costly or damaging to us. Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our regulatory responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan, study protocols for the trial, statistical analysis plan and other study-specific documents (for example, monitoring and blinding plans). Moreover, the FDA requires us to comply with standards, commonly referred to as Good Clinical Practice (GCP), International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use, or ICH, guidelines, and regulations regarding the informed consent process, safety reporting requirements, data collection guidelines, and other regulations for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. The EMA, also requires us to comply with similar standards. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs fail to comply with applicable GCP requirements, the clinical data generated in our clinical trials may be deemed unreliable and the FDA, EMA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP and other applicable regulations. In addition, our clinical trials must be conducted with product produced under applicable current Good Manufacturing Practices (cGMP) and current Good Tissue Practices (cGTP) regulations. Our failure to comply with these regulations may require us to conduct new clinical trials, which would delay the marketing approval process. We also are required to register certain ongoing clinical trials and post the results of certain completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

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 or our partners may experience in our clinical studies, we or our partners may not receive approval to market any product candidates, which could prevent us from ever generating product or royalty revenues or achieving profitability. Results of our studies could reveal an unacceptably high severity and incidence of side effects, or risks that outweigh the benefits of our product candidates. In such an event, our studies could be suspended or terminated, and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. The drug-related side effects could affect patient recruitment or the ability of enrolled subjects to complete the study or result in potential product liability claims.

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

- we may be forced to suspend marketing of that product;
- regulatory authorities, IRBs, or other clinical trial oversight bodies may place a hold on any ongoing clinical trials;
- 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;
- our products may be seized, or we may be required to recall our products;
- our products may become less competitive in the marketplace; and
- our reputation may suffer.

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

The market opportunities for our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small.

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

Our projections of both the number of people who have the diseases we are targeting, as well as the subset of people with these diseases in a position to receive second or later lines of therapy, and who have the potential to benefit from treatment with our product candidates, are based on our current beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or our own market research, and may prove to be incorrect, including if the COVID-19 pandemic and associated responses impact our ability to engage with key stakeholders within the transplant center in person. Further, new studies, product approvals or market research may change the estimated incidence or prevalence of these diseases, and the number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates. For instance, we expect our lead product candidate, tab-cel®, to initially target a patient population that suffers from aggressive EBV+PTLD who have failed rituximab or rituximab plus chemotherapy. At the outset of the COVID-19 pandemic, we initially observed a temporary slow-down in stem cell and solid organ transplant volumes. These reductions were transient, but if a reduction in such volumes resumes, it could result in lower PTLD incidence and thus reduce the demand for tab-cel®. Even if we obtain significant market share for our product candidates, because the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications.

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

Regulatory authorities in some jurisdictions, including the U.S., EU and the United Kingdom (U.K.), 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 biologic for the same indication 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. In the U.S., the FDA may still approve a later marketing application blocked by an ongoing period of orphan drug exclusivity in limited circumstances such as a showing of clinical superiority to the product with orphan drug exclusivity or if the FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the biological product was designated. As a result, even if one of our product candidates receives orphan exclusivity, the FDA can still approve or license other drugs or biological products that have a different active ingredient for use in treating the same indication or disease. Further, the FDA can waive orphan exclusivity if we are unable to manufacture sufficient supply of our product.

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

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

Although we have obtained BTD and PRIME designation for tab-cel® for rituximab-refractory EBV+ PTLD in the U.S. and the EU, respectively, these designations may not lead to faster development or regulatory review and do 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 other expedited review programs, such as priority review. Based on our BTD, we may pursue a rolling submission strategy for our BLA for tab-cel® for EBV+ PTLD in the U.S. While rolling review process may provide the opportunity for ongoing communications with and feedback from the FDA, it may not result in a faster timeline to marketing approval or result in approval at all. The FDA may raise issues and pose questions to us that may delay the initiation and completion of our BLA submission, acceptance of the complete BLA for filing, and approval of the BLA. We may not be able to provide a satisfactory or a timely response to FDA questions or we may not be able to timely gather the required data to prepare our BLA submissions as we plan. If we are unable to address all questions or concerns the FDA may raise or if we do not have timely access to the data required for the preparation of the BLA, we may not be able to timely initiate and complete our BLA and ultimately receive FDA approval. In addition, even if we submit our BLA under the rolling review process, the FDA may decide not to review portions of our BLA under the rolling review process until the submission is deemed to be complete.

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

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

A Fast Track designation by the FDA, even if granted for other current or future product candidates, may not lead to a faster development or regulatory review, licensure process and does not increase the likelihood that our product candidates will receive marketing licensure.

We may seek Fast Track designation for one or more of our future product candidates. In December 2021, ATA188 received Fast Track designation. If a drug or biological product is intended for the treatment of a serious or life-threatening disease or condition and it demonstrates the potential to address unmet medical needs for such a disease or condition, the drug sponsor may apply for FDA Fast Track designation for a particular indication. We may seek Fast Track designation for our product candidates, but there is no assurance that the FDA will grant this designation to any of our proposed product candidates. Marketing applications submitted by sponsors of products in Fast Track development may qualify for priority review under the policies and procedures offered by the FDA, but the Fast Track designation does not assure any such qualification or ultimate marketing licensure by the FDA. The FDA has broad discretion whether or not to grant Fast Track designation, so even if we believe a particular product candidate is eligible for this designation, there can be no assurance that the FDA would decide to grant it. Even if we do receive Fast Track designation, we may not experience a faster development process, review or licensure compared to conventional FDA procedures or pathways and receiving a Fast Track designation does not provide assurance of ultimate FDA licensure. In addition, the FDA may withdraw Fast Track designation if it believes that the designation is no longer supported by data from our clinical development program. In addition, the FDA may withdraw any Fast Track designation at any time.

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 EU, the U.K., many Asian countries and other jurisdictions, we, or our current or future commercialization partners, 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 and may include additional risks. 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 and regulatory agency or payor does not ensure approval by any other regulatory or payor authorities in other countries or jurisdictions. 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 US, EU, the U.K., 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, or our partners 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 CMOs and CROs for any post-approval clinical studies that we conduct. They also include any post-approval requirements or commitments imposed by FDA as a condition of approval, or any risk evaluation or mitigation strategies (REMS), if applicable. The safety profile of any product will continue to be closely monitored by the FDA and comparable foreign regulatory authorities after approval. If the FDA or comparable foreign regulatory authorities become aware of new safety information after approval of any of our product candidates, they may require labeling changes or establishment of a risk evaluation and mitigation strategy, impose significant restrictions on a product's indicated uses or marketing or impose ongoing requirements for potentially costly post-approval studies or post-market surveillance.

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

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

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

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

Changes to regulations, recommendations or other guidelines advocating alternative therapies for the indications we treat could result in decreased use of our products. For example, although treatment with EBV-specific T cells is recognized as a recommended treatment for persistent or progressive EBV+ PTLD as set forth in the 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 internal development, 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. Any product candidates we identify, acquire, in-license, or develop may not be safe or effective for their targeted diseases, and may not receive marketing authorization in a timely manner, or at all.

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

In addition, we need to conduct significant development and scale-up work to transfer these processes and manufacture each of our product candidates for various studies, clinical studies and commercial launch readiness. To the extent we elect to transfer manufacturing within our network or to third-party CMOs, 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, comparability issues, stability issues, consistency and timely availability of reagents or raw materials. The manufacturing facilities in which our product candidates will be made could be adversely affected by the ongoing COVID-19 pandemic, earthquakes and other natural or man-made disasters, equipment failures, labor shortages, power failures, and numerous other factors. In addition, there have been, and there may continue to be, transient interruptions in the supply of raw materials and consumables used in the development and manufacturing of our preclinical and clinical cell therapies related to the COVID-19 pandemic, including leukapheresis collections, which supply raw materials used in our product candidates. If we are unable to obtain such raw materials or other necessary raw materials in a timely manner, our business operations and manufacturing capabilities could be adversely affected.

The process of manufacturing cellular therapies is susceptible to product loss due to contamination, equipment failure or improper installation or operation of equipment, or vendor or operator error. Even minor deviations from normal manufacturing and distribution processes for any of our product candidates could result in reduced production yields, impact to key product quality attributes, and other supply disruptions. Product defects can also occur unexpectedly. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, these manufacturing facilities may need to be closed for an extended period of time to allow us to investigate and remedy the contamination. Because our T-cell immunotherapy product candidates are manufactured from cells collected 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 intermediate or cell product lots, each with a different HLA profile. As a result, the selection and distribution of the appropriate cell product lot 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.

Delays in receiving regulatory approvals for product candidates produced in our manufacturing facility or at our CMOs' facilities could delay our development plans and thereby limit our ability to generate revenues.

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

In addition to the similar manufacturing risks described in "Risks Related to Our Dependence on Third Parties," our manufacturing facility, and our CMOs' facilities, will be subject to ongoing, periodic inspection by the FDA, EMA or other comparable regulatory agencies to ensure compliance with cGMP and GTP. Our, or our partner's, 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 inventory of 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
- achieving and maintaining ongoing compliance with cGMP regulations and other requirements of the FDA, EMA or other comparable regulatory agencies.

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

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

A number of the product candidates in our portfolio, if approved by 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 quantities 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 our CMOs' facilities or the equipment in any such 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 or CMOs we may delay development and/or commercialization of our product candidates.

We rely in part on our CMOs or our partners for the current production of our product candidates and the acquisition of materials incorporated in or used in the manufacturing or testing of our product candidates. Our CMOs or partners are not our employees, and except for remedies available to us under our agreements with our CMOs or partners, we cannot directly control whether or not they devote sufficient time and resources, including experienced staff, to the manufacturing of supply for our ongoing clinical, nonclinical and preclinical programs. Our CMOs for tab-cel® will need to be prepared to undergo pre-approval inspection in connection with our MAA filing and our anticipated BLA submission, and we cannot be certain that we will be able to adequately support them through such inspection nor that they will successfully pass any such inspection.

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

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

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

While our manufacturing facility in Thousand Oaks, California provides us with flexibility within our manufacturing network, we still may need to identify additional CMOs for continued production of supply for some of our product candidates. Given the nature of our manufacturing processes, the number of CMOs who possess the requisite skill and capability to manufacture our T-cell immunotherapy product candidates, and the critical intermediates or reagents used to manufacture such products, are 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 methodologies or assessments for these materials, regulatory authorities may require that we conduct additional studies, including bridging comparability testing, and further clinical development or commercial launch of our product candidates could be substantially delayed.

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, the possibility that the third-party does not devote sufficient time or resources to our product candidates or any products we may eventually commercialize based on its own business priorities, the possibility that the third-party is acquired by another party and changes its business priorities, 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 and testing laboratories for key materials used to produce or test 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.

Bayer is generally responsible for the conduct and funding of the development and commercialization of ATA2271 and ATA3271.

Pursuant to the Bayer License Agreement, Bayer holds an exclusive, field-limited license to ATA2271 and ATA3271. As a result, other than the development of ATA2271 through Phase 1, Bayer is generally responsible for the development and obtaining and maintaining regulatory approval and commercialization of ATA2271 and ATA3271.

Although we have joint governance and certain decision making rights, we do not control the development activities being conducted or that may be conducted in the future by Bayer, including, but not limited to, the timing of initiation, termination or completion of clinical trials, the analysis of data arising out of those clinical trials or the timing of release of data concerning those clinical trials, which may impact our ability to report on Bayer's results. Bayer may conduct these activities more slowly or in a different manner than we would if we controlled the development of ATA2271 after Phase 1 and ATA3271. Bayer is responsible for submitting future applications to the FDA and other regulatory authorities for approval of ATA2271 and ATA3271 and will be the owner of marketing approvals issued by the FDA and other regulatory authorities for ATA2271 and ATA3271, if approved. If the FDA or other regulatory authorities approve ATA2271 and/or ATA3271, Bayer will also be responsible for the marketing and sale of the resulting product. However, we cannot control whether Bayer will devote sufficient attention and resources to the development of ATA2271 and/or ATA3271 or will proceed in an expeditious manner. Even if the FDA or other regulatory agencies approve ATA2271 and/or ATA3271, Bayer may elect not to proceed with the commercialization of the resulting product in one or more countries, unless otherwise specified in the Bayer License Agreement.

In March 2021, we entered into the Bayer Manufacturing Agreement for the supply of allogeneic mesothelin-directed CAR T-cell therapies for clinical trials. Delays to the activities contemplated by the Bayer Manufacturing Agreement may result in a delay in the ATA2271 and/or ATA3271 programs and would delay and could prevent us from obtaining revenues for this product candidate.

Disputes may arise between us and Bayer, which may delay or cause the termination of any clinical trials of ATA2271 and/or ATA3271, result in significant litigation or cause Bayer to act in a manner that is not in our best interest. The costs associated with the continuing development of ATA2271 and/or ATA3271 may cause Bayer to reconsider the terms of its investment and seek to amend or terminate our agreement or to suspend the development of ATA2271 and/or ATA3271. If development of ATA2271 and/or ATA3271 does not progress for these or any other reasons, we would not receive milestone payments or royalties on product sales from Bayer with respect to ATA2271 and/or ATA3271. If the results of one or more clinical trials with ATA2271 and/or ATA3271 do not meet Bayer's expectations at any time, Bayer may elect to terminate further development of ATA2271 and/or ATA3271 or certain of the potential clinical trials for ATA2271 and/or ATA3271, even if the actual number of patients treated at that time is relatively small. In addition, Bayer generally has discretion to elect whether to pursue or abandon the development of ATA2271 and/or ATA3271 and may terminate our strategic alliance in whole or on a product-by-product basis for any reason upon 120 days prior notice.

If Bayer abandons ATA2271 and/or ATA3271, it would result in a delay in or could prevent us from commercializing ATA2271 and/or ATA3271 and would delay and could prevent us from obtaining revenues for this product candidate. If Bayer abandons development of ATA2271 and/or ATA3271 prior to regulatory approval or if it elects not to proceed with commercialization of the resulting product following regulatory approval, we would have to seek a new partner for development or commercialization, curtail or abandon that development or commercialization, or undertake and fund the development of ATA2271 and/or ATA3271 or commercialization of the resulting product ourselves. If we seek a new partner but are unable to do so on acceptable terms, or at all, or do not have sufficient funds to conduct the development or commercialization of ATA2271 and/or ATA3271 ourselves, we would have to curtail or abandon that development or commercialization, which could harm our business.

We are dependent on Pierre Fabre for the potential commercialization of tab-cel in the European Union and several countries outside the United States. The failure of Pierre Fabre to meet its contractual, regulatory or other obligations could adversely affect our business.

We have entered into the Pierre Fabre Commercialization Agreement for tab-cel in Europe and select emerging markets in the Territory for EBV-positive cancers. As a result, we are entirely dependent on Pierre Fabre for marketing and commercialization of tab-cel, if approved, in the Territory. The timing and amount of any milestone and royalty payments we may receive under these agreements, as well as the commercial success of tab-cel in the Territory, will depend on, among other things, the efforts, allocation of resources and successful commercialization of tab-cel by Pierre Fabre.

We are in the process of negotiating various ancillary agreements as contemplated by the Pierre Fabre Commercialization Agreement, including an agreement for the manufacture and supply of tab-cel to Pierre Fabre for commercialization in the Territory. Delays to the negotiation and execution of the ancillary agreements, or the activities contemplated by the ancillary agreements may result in a delay to the commercialization of tab-cel in the Territory and would delay and could prevent us from obtaining revenues for tab-cel in the Territory.

Under the terms of the Pierre Fabre Commercialization Agreement, if we receive the EU marketing authorization for tab-cel in patients with EBV+ PTLD, we are required to transfer the marketing authorization to Pierre Fabre. Pierre Fabre will be responsible for obtaining all other regulatory approvals in the Territory and maintaining all regulatory approvals in the Territory. We will depend on Pierre Fabre to comply with numerous and varying regulatory requirements governing, if and when applicable, 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. We do not control the individual efforts of Pierre Fabre and have limited ability to terminate the Pierre Fabre Commercialization Agreement if Pierre Fabre does not perform as expected. The failure of Pierre Fabre to devote sufficient time and effort to comply with regulatory requirements and maintain the EU marketing authorization and other regulatory approvals in the Territory and/or to meet their obligations to us, could have an adverse impact on our financial results and operations.

We also depend on Pierre Fabre to comply with all applicable laws relative to the commercialization of tab-cel in the Territory. We do not control the individual efforts of Pierre Fabre and have limited ability to terminate the Pierre Fabre Commercialization Agreement if Pierre Fabre does not perform as expected. The failure of Pierre Fabre to devote sufficient time and effort to the commercialization of tab-cel; to meet their obligations to us, including for future royalty and milestone payments; to adequately deploy business continuity plans in the event of a crisis; and/or to satisfactorily resolve significant disagreements with us or address other factors could have an adverse impact on our financial results and operations. In addition, if Pierre Fabre violates, or are alleged to have violated, any laws or regulations during the performance of their obligations for us, it is possible that we could suffer financial and reputational harm or other negative outcomes, including possible legal consequences.

Any termination, breach or expiration of the Pierre Fabre Commercialization Agreement could have a material adverse effect on our financial position by reducing or eliminating the potential for us to receive fees, milestones and royalties. In such an event, we may be required to devote additional efforts and to incur additional costs associated with the transfer of regulatory approvals and commercialization of tab-cel in the Territory. Alternatively, we may attempt to identify and transact with a new commercialization partner, but there can be no assurance that we would be able to identify a suitable partner or transact on terms that are favorable to us.

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 additional 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 48 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 Our Intellectual Property

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

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

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

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

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

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

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

In addition, the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction.

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

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

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

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

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

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

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

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

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

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

Filing, prosecuting, enforcing and defending patents on all of our product candidates in all countries throughout the world would be prohibitively expensive. Our intellectual property rights in certain countries outside the U.S. may be less extensive than those in the U.S. In addition, the laws of certain foreign countries do not protect intellectual property rights to the same extent as laws in the U.S. Consequently, we and our partners may not be able to prevent third parties from practicing our inventions in countries outside the U.S., or from selling or importing infringing products made using our inventions in and into the U.S. or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection or where we do not have exclusive rights under the relevant patents to develop their own products and, further, may export otherwise-infringing products to territories where we and our partners have patent protection but where enforcement is not as strong as that in the U.S. These infringing products may compete with our product candidates in jurisdictions where we or our partners have no issued patents or where we do not have exclusive rights under the relevant patents, or our patent claims and other intellectual property rights may not be effective or sufficient to prevent them from so competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biopharmaceuticals, which could make it difficult for us and our partners to stop the infringement of our patents or marketing of competing products in violation of our intellectual property rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims against us or our partners. We or our partners may not prevail in any lawsuits that we or our licensors initiate, and even if we or our licensors are successful the damages or other remedies awarded, if any, may not be commercially meaningful.

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

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

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

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

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

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

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

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

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

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

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

Risks Related to Commercialization of Our Product Candidates

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

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

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

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

Our ability to commercialize any product successfully will depend, in part, on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, determine which medications they will cover and establish reimbursement levels. A primary trend in the healthcare industry is cost containment. Government authorities and third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Third-party payors may also seek additional clinical evidence, beyond the data required to obtain regulatory approval, demonstrating clinical benefits and value in specific patient populations before covering our products for those patients. We cannot be sure that coverage and adequate reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. In some countries such as the U.S., greater cost-shifting from the payor to the patient is also a trend, and higher patient copayments or other administrative burdens could lead to reduced demand from patients or healthcare professionals. This could particularly be the case in a

challenging economic climate. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain regulatory approval, and ultimately our ability to successfully commercialize any product candidate for which we obtain regulatory approval.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or comparable foreign regulatory authorities. Moreover, eligibility for coverage and reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may only be temporary. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the U.S. Coverage and reimbursement policies for drug products can differ significantly from payor to payor as there is no uniform policy of coverage and reimbursement for drug products among third-party payors in the U.S. Third-party payors in the U.S. often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. There may be significant delays in obtaining coverage and reimbursement as the process of determining coverage and reimbursement is often time consuming and costly which will require us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage or adequate reimbursement will be obtained. It is difficult to predict at this time what government authorities and third-party payors will decide with respect to coverage and reimbursement for our drug products. Our inability to promptly obtain coverage and profitable reimbursement rates from both government-funded and private payors for any approved products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

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

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

Other legislative changes have been proposed and adopted in the U.S. since the Affordable Care Act was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by the U.S. Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013, and, due to subsequent legislative amendments, will remain in effect into 2031 unless additional Congressional action is taken. COVID-19 relief legislation suspended the 2% Medicare sequester from May 1, 2020 through March 31, 2022. Sequestration will start again on April 1, 2022. From April 1 to June 30, 2022, payment for Medicare fee-for-service claims will be adjusted downwards by 1%; beginning July 1, 2022, the payment will be adjusted downwards by 2%. In January 2013, the American Taxpayer Relief Act of 2012 (the ATRA) was enacted which, among other things, further reduced Medicare payments to several providers, including hospitals and outpatient clinics, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

There 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. In addition, the U.S. Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While the U.S. Congress has not passed comprehensive repeal legislation, it has enacted laws that modify certain provisions of the Affordable Care Act, such as removing penalties, starting January 1, 2019, for not complying with the Affordable Care Act's

individual mandate to carry health insurance, eliminating the implementation of certain mandated fees, and increasing the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D. On June 17, 2021, the U.S. Supreme Court dismissed a legal challenge to the law brought by several states arguing that, without the individual mandate, the entire Affordable Care Act was unconstitutional. The Supreme Court dismissed the lawsuit without ruling on the merits of the states' constitutionality arguments. While the legal challenge to the Affordable Care Act was pending, on January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through August 15, 2021 for purposes of obtaining health insurance coverage through the Affordable Care Act marketplace. The executive order also instructed certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the Affordable Care Act. In the future, there may be additional challenges and/or amendments to the Affordable Care Act. It is unclear how the United States Supreme Court ruling, other such litigation, and the healthcare form measures of the Biden administration will impact the Affordable Care Act and our business.

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 U.S. 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 EU and other potentially significant markets for our product candidates, government authorities and third-party payors are increasingly attempting to limit or regulate the price of medical products and services, particularly for new and innovative products and therapies, which has resulted in lower average selling prices for certain products in certain markets. In the U.S., there have been several 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. For example, the Consolidated Appropriations Act of 2021 included several drug price reporting and transparency measures, such as a new requirement for certain Medicare plans to develop tools to display Medicare Part D prescription drug benefit information in real time and for group and health insurance issuers to report information on pharmacy benefit and drug costs to the Secretaries of Health and Human Services, Labor, and the Treasury.

There have also been administrative developments in the U.S. related to drug pricing. For example, included in the Consolidated Appropriations Act of 2021 were several drug price reporting and transparency measures, such as a new requirement for certain Medicare plans to develop tools to display Medicare Part D prescription drug benefit information in real time and for group and health insurance issuers to report information on pharmacy benefit and drug costs to the Secretaries of the Departments of Health and Human Services, Labor and the Treasury. Additionally, on July 9, 2021, President Biden issued an Executive Order to promote competition in the U.S. economy that included several initiatives addressing prescription drugs. Among other provisions, the Executive Order stated that the Biden administration will "support aggressive legislative reforms that would lower prescription drugs, including by allowing Medicare to negotiate drug prices, by imposing inflation caps, and through other related reforms." In response to the Executive Order, on September 9, 2021, the Department of Health and Human Services issued a Comprehensive Plan for Addressing High Drug Prices that identified potential legislative policies and administrative tools that Congress and the agency can pursue in order to make drug prices more affordable and equitable, improve and promote competition throughout the prescription drug industry, and foster scientific innovation. 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 EU 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, other insurers, judicial decisions and governmental laws and regulations related to Medicare, Medicaid and healthcare reform, pharmaceutical reimbursement policies and pricing in general. Further, it is possible that additional governmental action is taken in response to the COVID-19 pandemic.

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 EU and the U.K., 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 EU 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 of EBV+ PTLD. However, some marketed products and therapies are used off-label in the treatment of EBV+ PTLD, such as rituximab and combination chemotherapy regimens. In addition, a number of companies and academic institutions are developing product candidates for EBV+ PTLD and other EBV-driven diseases including: Viracta Therapeutics, Inc., which is conducting a pivotal, Phase 2 clinical study for nanatinostat (formerly named tractinostat, or VRx-3996) in combination with antiviral drug valganciclovir in relapsed/refractory EBV+ lymphomas; AlloVir (formerly known as ViraCyte), which has completed a Phase 2 clinical study for Viralym-M (ALVR105), an allogeneic, multi-virus T-cell product that targets six viruses in allogeneic HSCT recipients with ≥1 treatment-refractory infection, including EBV, and is conducting a pivotal study for Virus-Associated Hemorrhagic-Cystitis, as well as a Phase 2 proof of concept trial for the prevention of BKV, CMV, AdV, EBV, HHV06 and JCV in post-allogeneic HSCT patients; and Tessa Therapeutics Pte Ltd., is conducting a Phase 1 clinical study of its autologous CD30 CAR T in CD30+ NHL and funding a Phase 1, investigator-sponsored study at Baylor College of Medicine, for its allogeneic CD30-CAR EBVST product candidate.

Competition in the MS market is high with at least 20 therapies, including four generics or bioequivalents, approved in the U.S. and EU for the treatment of various forms of MS, including clinically isolated syndrome, relapsing-remitting MS (RRMS), secondary progressive MS (SPMS) and primary progressive MS (PPMS). There are many competitors in the MS market, including major multi-national fully-integrated pharmaceutical companies and established biotechnology companies. Most recently, Ponvory (S1P modulator), marketed by Johnson & Johnson, and Kesimpta® (anti-CD20 monoclonal antibody), marketed by Novartis, were approved in the U.S. and/or EU for the treatment of relapsing forms of MS.

There are numerous development candidates in Phase 3 studies for both relapsing and/or progressive forms of MS and additional novel agents could be approved in either or both indications in the future including TG Therapeutics' anti-CD20 monoclonal antibody ublituximab (estimated PDUFA 09/2022), Merck KGaA's Bruton's tyrosine kinase (BTK) inhibitor, evobrutinib, Roche's BTK inhibitor, fenebrutinib, Sanofi's BTK inhibitor, tolebrutinib and AB Science's tyrosine kinase inhibitor, masitinib. Medicinova is planning to initiate a Phase 3 study of its PDE inhibitor, ibudilast (MN166) in non-active SPMS.

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

Many of the approved or commonly used drugs and therapies for our current or future target diseases, 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. Absent differentiated and compelling clinical evidence, pricing premiums may impede the adoption of our products over currently approved or commonly used therapies, which may adversely impact our business. In addition, many companies are developing new therapeutics, and we cannot predict what the standard of care will become as our products continue in clinical development.

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

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

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

The Biologics Price Competition and Innovation Act of 2009 (BPCIA) was enacted as part of the Affordable Care Act to establish an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an approved biologic. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the reference product was approved under a BLA. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. 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 from the sale of our products.

We are at an 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, or entering into agreements with third parties to market and sell our products, 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 December 31, 2021, we had 578 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, including the additional personnel needed to support continued development and potential commercialization of our product candidates;
- managing our internal development efforts effectively while complying with our contractual obligations to licensors, licensees, contractors and other third parties;
- improving our managerial, development, operational, information technology, and finance systems; and
- expanding our facilities.

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

Risks Related to Ownership of Our Common Stock

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

Our stock price has fluctuated in the past and can be expected to be volatile in the future. From January 1, 2019 through December 31, 2021, the reported sale price of our common stock has fluctuated between $4.52 and $41.97 per share. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. In particular, the ongoing COVID-19 pandemic has further heightened the volatility of the stock market for biopharmaceutical companies. As a result of this volatility, investors may experience losses on their investment in our common stock. The market price of our common stock may be influenced by many factors, including the following:

- the success of competitive products or technologies;
- regulatory actions with respect to our product candidates or products or our competitors' product candidates or products;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

General Risk Factors

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

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

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

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

Healthcare providers, including physicians, and third-party payors will play a primary role in the recommendation and prescription of any product candidates for which we obtain regulatory approval. Our current and future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we conduct research and would market, sell and distribute our products. As a biopharmaceutical 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. If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws will increase significantly, and our costs associated with compliance with such laws are also likely to increase. These laws may impact, among other things, our current activities with principal investigators and research patients, as well as proposed and future sales, marketing and education programs, distribution agreements, discounting, commission compensation, certain patient support offerings, and other business arrangements generally. In addition, the approval and commercialization of any of our product candidates outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned here, among other foreign laws. Restrictions under applicable federal and state healthcare laws and regulations that may affect certain business arrangements and our ability to operate include, but are not limited to, the following:

- the federal healthcare Anti-Kickback Statute, a criminal law that governs, for example, 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;
- the FDCA and PHSA, which prohibit the misbranding and adulteration of biological products that are regulated as drugs, and which regulate the marketing of biological products;
- federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws impose criminal and civil penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment or approval that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- provisions enacted under the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) impose criminal and civil liability for knowingly and willfully executing or attempting to execute, a scheme or artifice to defraud any healthcare benefit program and also impose criminal liability for, among other things, 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 HITECH also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information held by covered entities and their business associates and their subcontractors that use, disclose or otherwise process individually identifiable health information;
- the federal Physician Payments Sunshine Act, implemented as the Open Payments Program, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to CMS information related to payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations. Beginning in 2022, applicable manufacturers are also required to report information regarding payments and other transfers of value to physician assistants, nurse practitioners, clinical nurse specialists, anesthesiologist assistants, certified registered nurse anesthetists and certified nurse midwives;

- state and foreign laws and regulations that are analogous to, and may be broader in scope than, the federal laws and regulations described in this risk factor, such as state anti-kickback and false claims laws, may apply to sales or marketing or other arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers; and
- state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; 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 as well as those that require the registration of pharmaceutical sales representatives; and some 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, reputational harm, contractual damages, and diminished profits and future earnings, any of which could adversely affect our ability to operate our business and our results of operations. If any physicians or other healthcare providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to significant criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs.

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

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

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

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

- decreased demand for any product candidates or products that we may develop;
- clinical holds or 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.

The actual or perceived failure by us, our customers, or vendors to comply with increasingly stringent laws, regulations and contractual obligations relating to privacy, data protection, and data security could harm our reputation, and subject us to significant fines and liability.

We are or may become subject to numerous domestic and foreign laws and regulations regarding privacy, data protection, and data security, the scope of which is changing, subject to differing applications and interpretations and may be inconsistent among countries, or conflict with other rules. We are also subject to the terms of our contractual obligations to customers and third parties related to privacy, data protection, and data security. The actual or perceived failure by us, our customers, our vendors, or other relevant third parties to address or comply with these laws, regulations, and obligations could increase our compliance and operational costs, expose us to regulatory scrutiny, actions, fines and penalties, cause regulators to reject, limit or disrupt our clinical trial activities, result in reputational harm, lead to a loss of customers, reduce the use of our products, result in litigation and liability, and otherwise cause a material adverse effect on our business, financial condition, and results of operations.

For example, the EU adopted the General Data Protection Regulation (EU) 2016/679 (EU GDPR), in May 2018 which has direct effect in all EU member states and has extraterritorial effect where organizations outside of the EU *inter alia* process personal information of individuals in the EU in relation to the offering of goods or services to those individuals ("targeting test") or monitoring of their behavior ("monitoring test"). As such, the EU GDPR applies to us to the extent we are processing personal information in the context of an establishment in an EU Member State or we meet the requirements of either the targeting test or the monitoring test. The EU GDPR impose onerous and comprehensive privacy, data protection, and data security obligations onto controllers and processors, including, as applicable: (i) contractual privacy, data protection, and data security commitments, including the requirement to implement appropriate technical and organizational measures to safeguard personal information; (ii) establishing means for individuals to exercise their data protection rights; (iii) limitations on retention of personal information; (iv) additional requirements pertaining to sensitive information (such as health data); (v) data breach notification requirements to supervisory authorities without undue delay (and no later than 72 hours where feasible) and/or concerned individuals; (vi) high standards for obtaining valid consent from data subjects; (vii) obligations to consider data protection as any new products or services are developed;

and (viii) the provisions of more detailed privacy notices for clinical trial subjects and investigators. The EU GDPR also provides that EU member states may introduce further laws and regulations limiting the processing of genetic, biometric, or health data, which could limit our ability to collect, use and share EU data, cause our compliance costs to increase, require us to change our practices, adversely impact our business, and harm our financial condition.

The EU GDPR also restricts the transfer of personal information from the European Economic Area (EEA) to the United States and other countries that the European Commission does not recognize as having "adequate" data protection laws unless the parties to the transfer have implemented an appropriate data transfer mechanism in accordance with the EU GDPR. Data protection laws in the U.K. (as discussed below) and Switzerland impose similar restrictions. One of the primary mechanisms allowing U.S. companies to import personal information from the EU has been certification to the EU-U.S. Privacy Shield and Swiss-U.S. Privacy Shield frameworks. However, the EU-U.S. Privacy Shield framework was invalidated as a mechanism to legitimize international transfers in July 2020 in a decision by the Court of Justice of the EU (CJEU) and subsequent guidance required additional compliance efforts to analyze international data flows and take steps to ensure adequate protections for personal information transferred to the U.S. and other certain jurisdictions, including in certain cases by implementing supplementary measures that provide privacy protections in addition to those provided under the Standard Contractual Clauses (or SCCs). Similarly, the Swiss-U.S. Privacy Shield Framework was declared as inadequate by the Swiss Federal Data Protection and Information Commissioner in light of the CJEU's July 2020 decision. Moreover, new versions of the European Commission's SCCs (new EU SCCs), now the primary mechanism for the lawful transfer of personal information from the EU have been released requiring additional compliance and implementation efforts. If we are unable to implement a valid solution for personal information transfers to the United States and other countries, we will face increased exposure to regulatory actions, substantial fines, and injunctions against processing or transferring personal information from the EU, and we may be required to increase our data processing capabilities in Europe at significant expense. Inability to import personal information from the EU to the United States or other countries may decrease demand for our products and services as our customers that are subject to the EU GDPR may seek alternatives that do not involve personal information transfers out of the EU.

Assisting our customers, partners, and vendors in complying with the EU GDPR, or complying with the EU GDPR ourselves, may cause us to incur substantial operational costs or require us to change our business practices. There may also be a risk that the measures will not be implemented correctly or that individuals within the business will not be fully compliant with the required procedures.

The EU GDPR imposes significant fines for serious non-compliance of up to the greater of €20 million or four percent of consolidated global turnover and restrictions or prohibitions on data processing, which could impair our ability to do business in the EU, reduce demand for our services and adversely impact our business and results of operations. The EU GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies and obtain compensation for damages resulting from violations of the EU GDPR.

Further, following the United Kingdom's exit from the EU, known as Brexit, the EU GDPR's obligations continue to apply to the United Kingdom in substantially unvaried form under the so called "UK GDPR" by virtue of section 3 of the European Union (Withdrawal) Act 2018. The UK GDPR exists alongside the UK Data Protection Act 2018 which implements certain derogations in the UK GDPR into UK law. Under the UK GDPR, companies established in the United Kingdom and companies not established in the United Kingdom but who process personal information in relation to the offering of goods or services to individuals in the United Kingdom, or to monitor their behavior will be subject to the UK GDPR – the requirements of which are (at this time) largely aligned with those under the EU GDPR and as such, may lead to similar compliance and operational costs with potential fines of up to £17.5 million or 4% of global turnover. As a result, we are potentially exposed to two parallel data protection regimes, each of which authorizes fines and the potential for divergent enforcement actions. It should also be noted that the new EU SCCs do not automatically apply in the UK since Brexit, and the UK Government has not yet formally acknowledged the new EU SCCs, i.e., as a valid data transfer mechanism under the UK GDPR. Indeed, on 11 August 2021, the UK Information Commissioner's Office (ICO) launched a public consultation on its draft international data transfer agreement and guidance. This included the publication of a draft UK addendum that can be used with the new EU SCCs – however, this is yet to be finalized and as such, for the time being transfers from the UK to a third country should continue to be made in reliance on the "old" SCC.

Other countries outside of Europe continue to enact or are considering enacting similar cross-border data transfer restrictions and laws requiring local data residency, which could increase the cost and complexity of delivering our services and operating our business. For example, Brazil recently enacted the General Data Protection Law (Lei Geral de Proteção de Dados Pessoais or LGPD) (Law No. 13,709/2018), which broadly regulates the processing of personal information and imposes compliance obligations and penalties comparable to those of the EU GDPR.

Regulation of privacy, data protection and data security has also become more stringent in the United States. For example, the California Consumer Privacy Act (CCPA), which took effect on January 1, 2020, gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their

personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA may increase our compliance costs and potential liability. The CCPA will be expanded substantially on January 1, 2023, when the California Privacy Rights Act of 2020 (CPRA) becomes fully operative. The CPRA will, among other things, give California residents the ability to limit use of certain sensitive personal information, further restrict the use of cross-contextual advertising, establish restrictions on the retention of personal information, expand the types of data breaches subject to the CCPA's private right of action, provide for increased penalties for CPRA violations concerning California residents under the age of 16, and establish a new California Privacy Protection Agency to implement and enforce the new law. Other states have already passed similar comprehensive privacy laws that will also go into effect in 2023, and several more are considering their own versions of privacy legislation, demonstrating a strong trend towards more stringent state privacy, data protection and data security legislation in the U.S., which could increase our potential liability and adversely affect our business.

Compliance with U.S. and foreign privacy, data protection, and data security laws and regulations could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business. Moreover, complying with these various laws could require us to take on more onerous obligations in our contracts, restrict our ability to collect, use and disclose data, or in some cases, impact our ability to operate in certain jurisdictions. Failure to comply with U.S. and foreign privacy, data protection, and data security laws and regulations could result in government enforcement actions (which could include civil or criminal penalties), private litigation and/or adverse publicity and could negatively affect our operating results and business. Claims that we have violated individuals' privacy rights, failed to comply with privacy, data protection, and data security laws, or breached our contractual obligations, even if we are not found liable, could be expensive and time consuming to defend, could result in adverse publicity and could have a material adverse effect on our business, financial condition, and results of operations.

If our security measures are compromised, or our information technology systems or those of our vendors, and other relevant third parties fail or suffer security breaches, loss or leakage of data, and other disruptions, this could result in a material disruption of our services, compromise sensitive information related to our business, harm our reputation, trigger our breach notification obligations, prevent us from accessing critical information, and expose us to liability or other adverse effects to our business.

In the ordinary course of our business, we may collect, process, and store proprietary, confidential, and sensitive information, including personal information (including health information), intellectual property, trade secrets, and proprietary business information owned or controlled by ourselves or other parties. It is critical that we do so in a secure manner to maintain the confidentiality, integrity, and availability of such information. We face several risks relative to protecting this critical information, including loss of access risk, inappropriate use or disclosure, inappropriate modification, and the risk of our being unable to adequately monitor, audit and modify our controls over our critical information. This risk extends to the third-party service providers who handle elements of our operations.

We, our partners, our CROs, our CMOs, and other business vendors on which we rely depend on information technology and telecommunication systems for significant elements of our operations, including, for example, systems handling human resources, financial reporting and controls, regulatory compliance and other infrastructure operations. Notwithstanding the implementation of security measures, given the size and complexity of our information technology systems and those of our third-party vendors and other contractors and consultants, and the increasing amounts of proprietary, confidential and sensitive information that they maintain, such information technology systems are potentially vulnerable to breakdown, service interruptions, system malfunction, natural disasters, terrorism, war and telecommunication and electrical failures, as well as security breaches from inadvertent or intentional actions by our personnel, third-party vendors, contractors, consultants, business partners, and/or other third parties, or from cyber-attacks by malicious third parties (including the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering, and other means to affect service reliability and threaten the confidentiality, integrity, and availability of information), which may compromise our system infrastructure, or that of our third-party vendors and other contractors and consultants, or lead to data leakage. The risk of a security breach or disruption, particularly through accidental actions or omissions by trusted insiders, cyber-attacks or cyber intrusions, including by computer hackers, viruses, foreign governments, and cyber terrorists, has generally increased as the number, intensity, and sophistication of attempted attacks and intrusions from around the world have increased. Additionally, the increased usage of computers operated on home networks due to the shelter-in-place or similar restrictions related to the COVID-19 pandemic may make our systems more susceptible to security breaches. For example, in March 2021, MSK provided notice that MSK was one of many customers impacted by a data breach at Accellion, Inc., which provides a document-sharing system. MSK subsequently notified us that certain documents related to one of our discontinued programs were subject to the breach, which compromise we deemed immaterial. Although we take measures to protect sensitive data from unauthorized access, use or disclosure, we and our third party service providers frequently defend against and respond to cyber attacks, and our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to personnel error, malfeasance, or other malicious or inadvertent disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, manipulated, publicly disclosed, lost, or stolen.

Failures or significant downtime of our information technology or telecommunication systems or those used by our third-party service providers could cause significant interruptions to our operations, including preventing us from conducting tests or research and development activities and preventing us from managing the administrative aspects of our business. 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.

We may not be able to anticipate all types of security threats, and we may not be able to implement preventative measures effective against all such security threats. We also may not be effective in responding to, containing or mitigating the risks of an attack. The techniques used by cyber criminals change frequently, may not be recognized until launched, and can originate from a wide variety of sources, including outside groups such as external service providers, organized crime affiliates, terrorist organizations, hostile foreign governments or agencies, or cybersecurity researchers. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or those of our third-party vendors and other contractors and consultants, or inappropriate disclosure of confidential or proprietary information, we could incur liability and reputational damage and the further development and commercialization of our products and services could be delayed.

The costs related to significant security breaches or disruptions could be material and could exceed the limits of the cybersecurity insurance we maintain, if any, against such risks. If the information technology systems of our third-party vendors and other contractors and consultants become subject to disruptions or security breaches, we may have insufficient recourse against such third parties and may have to expend significant resources to mitigate the impact of such an event, and to develop and implement protections to prevent future events of this nature from occurring.

We cannot assure you that our data protection efforts and our investment in information technology will prevent significant breakdowns, data leakages, breaches in our systems, or those of our third-party vendors and other contractors and consultants, or other cyber incidents that could have a material adverse effect upon our reputation, business, operations, or financial condition. For example, if such an event were to occur and cause interruptions in our operations, or those of our third-party vendors and other contractors and consultants, it could result in a material disruption of our programs and the development of our services and technologies could be delayed. Furthermore, significant disruptions of our internal information technology systems or those of our third-party vendors and other contractors and consultants, or security breaches could result in the loss, misappropriation, and/or unauthorized access, use, or disclosure of, or the prevention of access to, confidential information (including trade secrets or other intellectual property, proprietary business information, and personal information), which could result in financial, legal, business, and reputational harm to us. For example, any such event that leads to unauthorized access, use, or disclosure of personal information, including personal information regarding our customers or employees, could harm our reputation directly, compel us to comply with federal and/or state breach notification laws and foreign law equivalents, subject us to mandatory corrective action, and otherwise subject us to liability under laws and regulations that protect the privacy and security of personal information, which could result in significant legal and financial exposure and reputational damages that could potentially have an adverse effect on our business.

Although we take measures to protect sensitive data from unauthorized access, use or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to personnel error, malfeasance, or other malicious or inadvertent disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, manipulated, publicly disclosed, lost, or stolen.

Any such access, breach, or other loss of information could result in legal claims or proceedings, liability under domestic or foreign privacy, data protection and data security laws such as HIPAA and HITECH, and penalties. Notice of certain security breaches must be made to affected individuals, the Secretary of HHS, and for extensive breaches, notice may need to be made to the media or state attorneys general. Such notice could harm our reputation and our ability to compete. Although we have implemented security measures, such data is currently accessible through multiple channels, and there is no guarantee we can protect our data from breach. Unauthorized access, loss or dissemination could also damage our reputation or disrupt our operations, including our ability to conduct our analyses, conduct research and development activities, collect, process and prepare company financial information, and manage the administrative aspects of our business.

Penalties for violations of these laws vary. For instance, penalties for failure to comply with a requirement of HIPAA and HITECH vary significantly, and include significant civil monetary penalties and, in certain circumstances, criminal penalties with fines up to $250,000 per violation and/or imprisonment. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one-year imprisonment. The criminal penalties increase if the wrongful conduct involves false pretenses or the intent to sell, transfer or use identifiable health information for commercial advantage, personal gain or malicious harm.

Further, various states, such as California and Massachusetts, have implemented similar privacy laws and regulations, such as the California Confidentiality of Medical Information Act, that impose restrictive requirements regulating the use and disclosure of health information and other personally identifiable information. These laws and regulations are not necessarily preempted by HIPAA, particularly if a state afford greater protection to individuals than HIPAA. Where state laws are more protective, we have to comply with the stricter provisions. In addition to fines and penalties imposed upon violators, some of these state laws also afford private rights of action to individuals who believe their personal information has been misused. California's patient privacy laws, for example, provide for penalties of up to $250,000 and permit injured parties to sue for damages. Similarly, the CCPA allows consumers a private right of action when certain personal information is subject to unauthorized access and exfiltration, theft or disclosure due to a business' failure to implement and maintain reasonable security procedures. The interplay of federal and state laws may be subject to varying interpretations by courts and government agencies, creating complex compliance issues for us and data we receive, use and share, potentially exposing us to additional expense, adverse publicity and liability. Further, as regulatory focus on privacy issues continues to increase and laws and regulations concerning the protection of personal information expand and become more complex, these potential risks to our business could intensify. Changes in laws or regulations associated with the enhanced protection of certain types of sensitive data, for the treatment of genetic data, along with increased customer demands for enhanced data security infrastructure, could greatly increase our cost of providing our products, decrease demand for our products, reduce our revenues and/or subject us to additional liabilities.

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

We are subject to income and non-income based taxes in the U.S. and various jurisdictions outside the U.S. Our business and financial condition could be adversely affected by changes in federal, state, local or international tax laws, changes in taxing jurisdictions' administrative interpretations, decisions, policies and positions, changes in accounting principles, applicability of withholding taxes, and changes to our business operations. For example, US legislations such as the Tax Act, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), and the American Rescue Act, made significant changes to the corporate tax rate, the potential realization of net deferred tax assets relating to our operations, taxation of foreign earnings, and deductibility of expenses, and could have a material impact on our financial position or results of operations.

Our ability to use net operating loss carryforwards and certain tax assets to offset future taxable income or taxes may be subject to certain limitations.

Our ability to use our federal and state net operating losses (NOLs) and certain other tax attributes 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 or other tax attributes.

As of December 31, 2021, we had significant U.S. federal and state NOLs due to prior period losses. Under the Tax Cuts and Jobs Act (the Tax Act), federal NOLs generated in tax years beginning on or after January 1, 2018 may be carried forward indefinitely, but the utilization of such federal NOLs is limited to 80% of current year taxable income. The CARES Act temporarily suspends this 80% taxable income limitation, allowing an NOL carryforward to fully offset taxable income in tax years beginning before January 1, 2021. It is uncertain if, and to what extent, various states will conform to the Tax Act or the CARES Act. The Tax Act nor the CARES Act had a material impact to our financial statements.

In addition, under Section 382 of the Internal Revenue Code of 1986, as amended (the Code), our ability to utilize these NOLs and other tax attributes, such as federal tax credits, in any taxable year may be limited if we have experienced an "ownership change". Generally, a Section 382 ownership change occurs if one or more stockholders or groups of stockholders who owns at least 5% of a corporation's stock increases its ownership by more than 50 percentage points over its lowest ownership percentage within a three-year testing period. Similar rules may apply under state tax laws. We performed a Section 382 analysis of transactions in our stock through December 31, 2021 and concluded that we have experienced ownership changes since inception that we believe under Section 382 of the Code will result in limitations on our ability to use certain pre-change NOLs and credits. In addition, we may experience subsequent ownership changes as a result of future equity offerings or other changes in the ownership of our stock, some of which are beyond our control. As a result, the amount of the NOLs and tax credit carryforwards presented in our financial statements could be limited and, in the case of NOLs generated before January 1, 2018 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. Similar provisions of state tax law may also apply to limit the use of accumulated state tax attributes. Regulatory changes, such as suspensions on the use of NOLs, or other unforeseen reasons, may cause our existing tax attributes to expire, decrease in value or otherwise be unavailable to offset future income tax liabilities.

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

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

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located in South San Francisco, California and consists of approximately 13,670 square feet of office space under a lease agreement that expires in May 2025. We also lease approximately 90,580 square feet of office, lab and cellular therapy manufacturing space in Thousand Oaks, California under a lease for which the initial 15-year term commenced in February 2018. Additionally, in November 2018, we entered into a lease agreement for approximately 51,160 square feet of office space in Thousand Oaks, California that expires in February 2026.

In March 2021, we entered into a new lease agreement for approximately 33,659 square feet of office, lab and warehouse space in Thousand Oaks, California. The initial 10.5-year term of this lease commenced in August 2021. We have the option to extend this lease for two additional five-year periods after the initial term.

Item 3. Legal Proceedings

None.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock has been listed on The Nasdaq Global Select Market under the symbol "ATRA" since October 16, 2014. Prior to that time, there was no public market for our common stock.

On February 18, 2022, there were 6 stockholders of record of our common stock. We are unable to estimate the total number of stockholders represented by these record holders, as many of our shares are held by brokers and other institutions on behalf of our stockholders.

Dividend Policy

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 do not intend to declare or pay any cash dividends in the foreseeable future. Any further determination to pay dividends on our capital stock will be at the discretion of our board of directors, subject to applicable laws, and will depend on our financial condition, results of operations, capital requirements, general business conditions and other factors that our board of directors considers relevant.

Securities Authorized for Issuance under Equity Compensation Plans

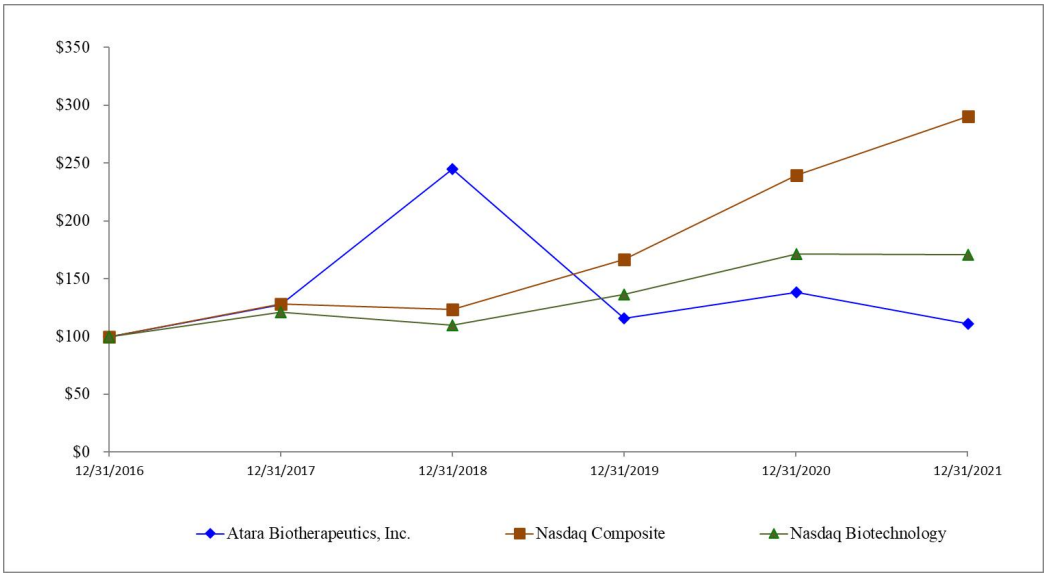
Information about our equity compensation plans is incorporated herein by reference to Item 12 of Part III of this Annual Report on Form 10-K.

Stock Performance Graph

The following graph compares the cumulative total return on an indexed basis of a $100 investment, made at the beginning of the five-year period ended December 31, 2021, in the Company's common stock, the Nasdaq Composite Index and the Nasdaq Biotechnology Index.

This performance graph shall not be deemed "soliciting material" or to be "filed" with the SEC for purposes of Section 18 of the Exchange Act or incorporated by reference into any filing of Atara Biotherapeutics, Inc. under the Securities Act or the Exchange Act, except to the extent we specifically incorporate it by reference into such filing. The past performance of our common stock is not an indication of future performance.

COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN



As of December 31,	Atara Biotherapeutics, Inc.	Nasdaq Composite	Nasdaq Biotechnology
2016	100.00	100.00	100.00
2017	127.46	128.24	121.06
2018	244.65	123.26	109.77
2019	115.99	166.68	136.56
2020	138.24	239.42	171.64
2021	110.99	290.63	170.55

Item 6. [Reserved]

Not Required.

Item 7. 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 audited consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. This discussion and other parts of this Annual 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 Annual Report, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

Atara Biotherapeutics is a pioneer in T-cell immunotherapy, leveraging its novel allogeneic Epstein-Barr virus (EBV) T-cell platform to develop transformative therapies for patients with serious diseases, including solid tumors, hematologic cancers and autoimmune disease. With our lead program in Phase 3 clinical development, we are the most advanced allogeneic T-cell immunotherapy company and intend to rapidly deliver off-the-shelf treatments to patients with high unmet medical need. Our platform leverages the unique biology of EBV T cells and has the capability to treat a wide range of EBV-driven diseases or other serious diseases through incorporation of engineered chimeric antigen receptors (CARs) or T-cell receptors (TCRs). Atara is applying this one platform, that does not require TCR or HLA gene editing, to create a robust pipeline. Our strategic priorities are:

- ***Tab-cel®***: Atara's most advanced T-cell immunotherapy program, tab-cel® (tabelecleucel), is partnered with Pierre Fabre Medicament (Pierre Fabre) for commercialization in Europe and select emerging markets and is currently in Phase 3 development for patients with EBV-driven post-transplant lymphoproliferative disease (EBV+ PTLD) who have failed rituximab or rituximab plus chemotherapy, as well as other EBV-driven diseases;
- ***ATA188***: T-cell immunotherapy targeting EBV antigens believed to be important for the potential treatment of primary and secondary progressive multiple sclerosis;
- ***CAR T Programs***:
    - ***ATA2271***: Autologous CAR T immunotherapy, currently in clinical development, targeting solid tumors expressing the tumor antigen mesothelin, which is partnered with Bayer;
    - ***ATA3271***: Allogeneic CAR T therapy, currently in preclinical development, targeting mesothelin, which is partnered with Bayer; and
    - ***ATA3219***: Allogeneic CAR T targeting CD19, currently in preclinical development, and being developed as a potential best-in-class product, based on a next generation 1XX co-stimulatory domain and the innate advantages of EBV T cells as the foundation for an allogeneic CAR T platform.

Our T-cell immunotherapy platform includes the capability to progress both allogeneic and autologous programs and is potentially applicable to a broad array of targets and diseases. Our off-the-shelf, allogeneic T-cell platform allows for rapid delivery of a T-cell immunotherapy product manufactured in advance of patient need and stored in inventory, with each manufactured lot of cells providing therapy for numerous potential patients. This differs from autologous treatments, in which each patient's own cells must be extracted, genetically modified outside the body and then delivered back to the patient, requiring a complex logistics network. We currently have on hand sufficient tab-cel drug product inventory to supply commercial demand, if approved and subject to the specifications set forth in such approval, for at least 12 months. For our allogeneic programs, we select the appropriate set of cells for use based on a patient's unique immune profile. In addition, our manufacturing facility has the flexibility to manufacture multiple T-cell and CAR T immunotherapies while integrating research and process science functions to enable increased collaboration for rapid product development. We are currently in the process of completing our facility's commercial production qualification activities for tab-cel® while building inventory according to our commercial product supply strategy.

In October 2021, we entered into the Commercialization Agreement with Pierre Fabre (Pierre Fabre Commercialization Agreement), pursuant to which we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia following regulatory approval. We will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America. Under the terms of the Pierre Fabre Commercialization Agreement, we are currently negotiating a Manufacturing and Supply Agreement as well as a number of ancillary agreements to further advance our collaboration with Pierre Fabre.

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

Our manufacturing facility in Thousand Oaks, California has the flexibility to manufacture multiple T-cell and CAR T immunotherapies while integrating research and process science functions to enable increased collaboration for rapid product development. We are currently in the process of completing our facility's commercial production qualification activities for tab-cel® while building inventory according to our commercial product supply strategy.

In addition to our manufacturing facility, we also work with Cognate pursuant to the Manufacturing Agreement that we entered into in December 2019. Pursuant to the Manufacturing Agreement, Cognate provides manufacturing services for certain of our product candidates. The initial term of the Manufacturing Agreement, as amended, runs until May 31, 2022. We may terminate the Manufacturing Agreement for convenience on six months' written notice to Cognate, or immediately if Cognate is unable to perform the services under the Manufacturing Agreement or fails to obtain or maintain certain necessary approvals. In March 2021, Charles River Laboratories Inc. (CRL) acquired Cognate.

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 $340.1 million, $306.6 million and $291.0 million for the years ended December 31, 2021, 2020 and 2019, respectively. As of December 31, 2021, we had an accumulated deficit of $1.5 billion. 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 December 31, 2021, our cash, cash equivalents and short-term investments totaled $371.1 million, which we intend to use to fund our operations.

Revenues

We have never generated revenues from the sale of products and have incurred losses since inception. We do not expect to receive any revenue from product sales unless and until we obtain regulatory approval for and commercialize one of our current or future product candidates. Our revenues to date have been derived solely under agreements with Bayer and Pierre Fabre and are primarily related to upfront license fees, fees for research, process development and translational activities and technology transfer fees. We expect that any revenue we generate from our Bayer Agreements, the Pierre Fabre Commercialization Agreement and any future collaboration and research and license partners will fluctuate from year to year as a result of the timing and number of milestones and other payments.

Research and Development Expenses

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

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

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

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

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

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

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

General and Administrative Expenses

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

Interest and Other Income, net

Interest and other income (expense), net consists primarily of interest earned on our cash, cash equivalents and short-term investments and translation gains and losses on transactions denominated in foreign currencies.

Income Taxes

Our provision for (benefit from) income taxes consists primarily of income taxes in U.S. states and foreign jurisdictions. Our effective tax rate was 0% for the years ended December 31, 2021, 2020, and 2019.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on ourconsolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities and expenses. On an on-going basis, we evaluate our critical accounting policies and estimates. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable in the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions and conditions. Our significant judgments and estimates

are detailed below, and our significant accounting policies are more fully described in Note 2 of the accompanying consolidated financial statements

Revenue Recognition

Revenue from out-license agreements is recognized when our customer obtains control of the promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. Revenue generated from our out-license agreements is not subject to repayment and typically includes upfront fees, development, regulatory and commercial milestone payments and royalties on the licensee's future product sales.

Our out-license agreements may include the transfer of intellectual property rights in the form of licenses, promises to provide research and development services and promises to participate on certain development committees with the collaboration party. We assess whether the promises in these agreements are considered distinct performance obligations that should be accounted for separately. Judgment is required to determine whether these promises are distinct.

The transaction price in each agreement is allocated to the identified performance obligations based on the standalone selling price (SSP) of each distinct performance obligation. Due to the early stage of our licensed technology, the license of such technology is typically combined with the additional promises in these agreements as one combined performance obligation.

Revenue associated with nonrefundable upfront license fees where the license fees and other promises cannot be accounted for as separate performance obligations is deferred and recognized as revenue over the expected period of performance using an appropriate recognition method based on the nature of the performance obligations. We utilize judgment to assess the pattern of delivery of the performance obligation. A cost-based input method of revenue recognition requires management to make estimates of costs to complete our performance obligations. In making such estimates, significant judgment is required to evaluate assumptions related to cost estimates. A time-based input method requires management to evaluate and estimate the pattern at which the performance obligation will be satisfied over the performance period. The cumulative effect of revisions to estimated costs to complete our performance obligations will be recorded in the period in which changes are identified and amounts can be reasonably estimated. A significant change in the assumptions and estimates could have a material impact on the timing and amount of revenue recognized in future periods.

At the inception of each agreement that includes development, regulatory or commercial milestone payments, we evaluate whether the milestones are considered probable of being reached and estimate the amount to be included in the transaction price by using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. The transaction price is allocated to each performance obligation in the agreement based on relative SSP. We typically determine SSPs using an adjusted market assessment approach model. Milestone payments that are not within our or the licensee's control, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. At the end of each subsequent reporting period, we re-evaluate the probability of achievement of each such milestone and any related constraint, and if necessary, adjust our estimates of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.

Certain judgments affect the application of our revenue recognition policy. For example, we record short-term and long-term deferred revenue based on our best estimate of when such revenue will be recognized. Short-term deferred revenue consists of amounts that are expected to be recognized as revenue in the next 12 months, and long-term deferred revenue consists of amounts that we do not expect will be recognized in the next 12 months. This estimate is based on our current operating plan and, if our operating plan should change in the future, we may recognize a different amount of deferred revenue over the next 12-month period.

Accrued Research and Development Expenses

As part of the process of preparing our financial statements, we are required to estimate and accrue expenses, the largest of which is related to research and development expenses, including those related to clinical studies and drug manufacturing. This process involves reviewing contracts and purchase orders, identifying and evaluating the services that have been performed on our behalf, and estimating the associated cost incurred for the services when we have not yet been invoiced or otherwise notified of the actual costs.

Costs for preclinical studies, clinical studies and manufacturing activities are recognized based on an evaluation of our vendors' progress towards completion of specific tasks, using data such as patient enrollment, clinical site activations or information provided to us by our vendors regarding their actual costs incurred. Payments for these activities are based on the terms of individual contracts and payment timing may differ significantly from the period in which the services were performed. We determine accrual estimates through reports from and discussions with applicable personnel and outside service providers as to the progress or state of completion of studies, or the services completed. Our estimates of accrued expenses as of each balance sheet date are based on the facts and

circumstances known at the time. Costs that are paid in advance of performance are deferred as a prepaid expense and amortized over the service period as the services are provided.

For the years ended December 31, 2021 and 2020, there were no material changes from our estimates of accrued research and development expenses. We do not believe there is a reasonable likelihood that there will be a material change in the future estimates of accrued research and development expenses. However, if actual results are not consistent with our estimates, we may be exposed to changes in accrued research and development expenses that could be material or the accrued research and development expenses reported in our financial statements may not be representative of the actual economic cost of accrued research and development.

Stock-based Compensation

We have stock-based compensation programs, which include restricted stock units (RSUs); stock options and an employee stock purchase plan. See Note 2 – "Summary of Significant Accounting Policies" and Note 10 – "Stockholders' Equity" in the Notes to Consolidated Financial Statements, included in Item 8. Financial Statements and Supplementary Data of this report for a complete discussion of our stock-based compensation programs. We account for stock-based compensation expense, including the expense for grants of RSUs and stock options that may be settled in shares of our common stock, based on the fair values of the equity instruments issued. The fair value is determined on the measurement date, which is generally the date of grant. The fair value of our RSUs is measured at the market price of our common stock on the measurement date. The fair value for our stock option awards is determined at the grant date using the Black-Scholes valuation model.

Assumptions for the Black-Scholes valuation model used for employee stock awards include:

- Expected term – We derived the expected term for employee stock awards using the "simplified" method (the expected term is determined as the average of the time-to-vesting and the contractual life of the options), as we have limited historical information to develop expectations about future exercise patterns and post vesting employment termination behavior. Expected term for non-employee awards is based on the remaining contractual term of an option on each measurement date.
- Expected volatility – Prior to 2021, expected volatility was estimated using comparable public companies' volatility for similar terms. Beginning in 2021, volatility is estimated using an average of Atara's historical volatility and comparable public companies' volatility for similar terms.
- Expected dividend rate – We have not historically declared or paid dividends to our stockholders and have no plans to pay dividends; therefore, we have assumed an expected dividend yield of 0%.
- Risk-free interest rate – The risk-free interest rate is based on the yields of U.S. Treasury securities with expected terms similar to that of the associated award.
- The fair value of our common stock is measured at the market price on the measurement date.

For awards with performance-based vesting criteria, we assess the probability of the achievement of the performance conditions at the end of each reporting period and begin to recognize the share-based compensation costs when it becomes probable that the performance conditions will be met. For awards that are subject to both service and performance conditions, no expense is recognized until it is probable that performance conditions will be met. We do not believe there is a reasonable likelihood that there will be a material change in the future estimates or assumptions we use to determine stock-based compensation expense. However, if actual results are not consistent with our estimates or assumptions, we may be exposed to changes in stock-based compensation expense that could be material or the stock-based compensation expense reported in our financial statements may not be representative of the actual economic cost of the stock-based compensation.

Accounting for Income Taxes

See Note 11 – "Income Taxes" in the Notes to Consolidated Financial Statements, included in Item 8. Financial Statements and Supplementary Data of this report for a complete discussion of the components of Atara's income tax expense, as well as the temporary differences that exist as of December 31, 2021.

Our consolidated effective income tax rate is influenced by tax planning opportunities available to us in the various jurisdictions in which we conduct business. Significant judgment is required in evaluating our tax positions, including those that may be uncertain. Atara is also required to exercise judgment with respect to the realization of our net deferred tax assets. Management evaluates all positive and negative evidence and exercises judgment regarding past and future events to determine if it is more likely than not that all or some portion of the deferred tax assets may not be realized. If appropriate, a valuation allowance is recorded against deferred tax assets to offset future tax benefits that may not be realized.

We do not believe that there is a reasonable likelihood that there will be a material change in our liability for uncertain income tax positions or our effective income tax rate. However, if actual results are not consistent with our estimates or assumptions, we may be exposed to losses that could be material. Atara recorded a valuation allowance of approximately $376.1 million as of December 31, 2021 related primarily to net operating losses, capitalized expenses and stock-based compensation.

Results of Operations

Comparison of the Years Ended December 31, 2021, 2020 and 2019

License and collaboration revenue

License and collaboration revenues for the periods indicated were as follows:

	Year ended December 31,			Increase (Decrease)	
	2021	2020	2019	2021 compared to 2020	2020 compared to 2019
	(in thousands)				
License and collaboration revenues	$ 20,340	$ —	$ —	$ 20,340	$ —

License and collaboration revenues were $20.3 million in 2021 as compared to zero in 2020 and 2019. The amount recorded in 2021 relates primarily to revenue recognized under the Bayer Agreements.

Research and development expenses

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

	Year ended December 31,			Increase (Decrease)	
	2021	2020	2019	2021 compared to 2020	2020 compared to 2019
	(in thousands)				
Tab-cel® expenses	$ 50,086	$ 61,196	$ 49,179	$ (11,110)	$ 12,017
ATA188, CAR T and other program expenses	36,424	25,124	34,869	11,300	(9,745)
Employee and overhead expenses	195,491	158,330	132,049	37,161	26,281
Total research and development expenses	$ 282,001	$ 244,650	$ 216,097	$ 37,351	$ 28,553

Tab-cel® expenses were $50.1 million in 2021 as compared to $61.2 million in 2020 and $49.2 million in 2019. The decrease in 2021 was primarily due to higher production activities in 2020 related to the build-up of our tab-cel® and process performance qualification activities at our manufacturing facility. The increase in 2020 was due to increased clinical trial costs and process performance qualification activities at our manufacturing facility, as well as increased activity to support our tab-cel® BLA filing.

ATA188, CAR T and other program expenses were $36.4 million in 2021 as compared to $25.1 million in 2020 and $34.9 million in 2019. The increase in 2021 was primarily related to research, development, and clinical trial costs to further advance ATA188 and our CAR T programs. The decrease in 2020 was primarily due to lower clinical study, manufacturing and other outside services costs for programs that are no longer in active development.

Employee and overhead expenses were $195.5 million in 2021 as compared to $158.3 million in 2020 and $132.0 million in 2019. The increases were primarily due to higher compensation-related costs from increased headcount and higher facility-related costs in support of our continuing expansion of research and development activities. Payroll and related costs increased by $19.3 million in 2021 as compared to 2020 and by $21.2 million in 2020 as compared to 2019. Facility-related costs increased by $11.7 million in 2021 as compared to 2020 and by $5.1 million in 2020 as compared to 2019. Outside service costs increased by $6.2 million in 2021 as compared to 2020 and remained consistent in 2020 as compared to 2019.

Total research and development expenses for 2021 and 2020 were not significantly impacted by the COVID-19 pandemic.

General and administrative expenses

General and administrative expenses for the periods indicated were as follows:

	Year ended December 31,			Increase (Decrease)	
	2021	2020	2019	2021 compared to 2020	2020 compared to 2019
			(in thousands)		
General and administrative expenses	$ 78,801	$ 64,402	$ 79,584	$ 14,399	$ (15,182)

General and administrative expenses were $78.8 million in 2021 as compared to $64.4 million in 2020 and $79.6 million in 2019. The increase in 2021 was primarily due to higher compensation-related costs from increased headcount and activities to support our anticipated tab-cel® launch. The decrease in 2020 was primarily due to decreases in outside services costs and non-cash stock-based compensation expenses. Total general and administrative expenses for 2021 and 2020 were not significantly impacted as a result of the COVID-19 pandemic.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception in 2012, we have funded our operations primarily through the issuance of common and preferred stock, issuance of pre-funded warrants to purchase common stock and from upfront fees from the Bayer License Agreement and the Pierre Fabre Commercialization Agreement.

In December 2020, we completed an underwritten public offering of 5,102,041 shares of common stock at a public offering price of $24.50 per share and pre-funded warrants to purchase 2,040,816 shares of common stock at a public offering price of $24.4999 per warrant. We received net proceeds of approximately $164.3 million after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

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

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 received aggregate net proceeds of approximately $140.7 million after deducting underwriting discounts and commissions and offering expenses payable by us.

In the past three years, we have entered into three separate sales agreements with Cowen and Company, LLC (Cowen): in February 2019 (the 2019 ATM Facility), in February 2020 (the 2020 ATM Facility) and in November 2021 (the 2021 ATM Facility). Each ATM facility provides or provided 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 facilities are deemed “at the market” offerings defined in Rule 415 under the Securities Act of 1933, as amended (the Securities Act), and were registered under the Securities Act. Commissions of up to 3.0% are due on the gross sales proceeds of the common stock sold under each ATM facility.

During the year ended December 31, 2021, we sold an aggregate of 6,240,601 shares of common stock under the ATM facilities, at an average price of $16.23 per share for net proceeds of $98.9 million, after deducting commissions and other offering expenses payable by us.

As of December 31, 2021, we have fully utilized the 2019 ATM Facility and the 2020 ATM Facility, and we had $78.3 million of common stock remaining and available to be sold under the 2021 ATM Facility.

From January 1, 2022 through February 15, 2022, we sold an additional 1,319,878 shares of common stock under the 2021 ATM Facility, at an average price of $15.88 per share, for gross proceeds of $21.0 million and net proceeds of $20.5 million, after deducting commissions and other offering expenses payable by us. As of February 15, 2022, we had $57.4 million of common stock remaining and available to be sold under the 2021 ATM Facility, subject to certain conditions as specified in the agreement.

We have incurred losses and negative cash flows from operations in each year since inception.We do not expect to receive any revenues from the sale of products unless and until we obtain regulatory approval for and commercialize any of our product candidates. As such, we anticipate that we will continue to incur losses in the foreseeable future. We expect that our operating expenses will continue to increase. As a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements. We may borrow funds on terms that may include restrictive covenants, including covenants that restrict the operation of our business, liens on assets, high effective interest rates and repayment provisions that reduce cash resources and limit future access to capital markets. In addition, we expect to continue to opportunistically seek access to additional funds through additional public or private equity offerings or debt financings including by utilizing the 2021 ATM Facility, through potential collaborations, partnering or other strategic arrangements, or a combination of the foregoing. To the extent that we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. To the extent that we raise additional funds through collaboration or partnering arrangements, we may be required to relinquish some of our rights to our technologies or rights to market and sell our products in certain geographies, grant licenses or other rights on terms that are not favorable to us, or issue equity that may be substantially dilutive to our stockholders.

Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Currently, our cash, cash equivalents and short-term investments are held in bank and custodial accounts and consist of money market funds, U.S. Treasury, government agency and corporate debt obligations, commercial paper and asset-backed securities.

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

	December 31, 2021	December 31, 2020
	(in thousands)	
Cash and cash equivalents	$ 106,084	$ 200,404
Short-term investments	264,984	300,255
Total cash, cash equivalents and short-term investments	$ 371,068	$ 500,659

Contractual Obligations and Commitments

We lease our corporate headquarters in South San Francisco, California under a non-cancellable lease agreement for approximately 13,670 square feet of office space. In October 2020, we entered into an amendment of this lease to extend the lease term by one year and in December 2021, we entered into a further amendment to extend the lease for an additional three years. The amended lease expires in May 2025.

In February 2017, we entered into a lease agreement for approximately 90,580 square feet of office, lab and cellular therapy manufacturing space in Thousand Oaks, California. The initial 15-year term of this lease commenced in February 2018, and the contractual obligations during the initial term are $16.4 million in aggregate. We have the option to extend this lease for two additional periods of ten and nine years, respectively, after the initial term. In connection with this lease, we were required to issue a letter of credit in the amount of $1.2 million to the landlord, which is recorded as long-term restricted cash in our 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 approximately 8,800 square feet of office and lab space in Aurora, Colorado. The initial term of this lease expires in April 2024. In February 2021, we further amended this lease to add an additional 2,861 square feet of lab space. The contractual obligations during the lease term are not material. We have the option to extend this lease for two additional five-year periods after the initial term.

In March 2021, we entered into a new lease agreement for approximately 33,659 square feet of office, lab and warehouse space in Thousand Oaks, California. The initial 10.5-year term of this lease commenced in August 2021 and the contractual obligations during the initial term are $21.0 million in aggregate. We have the option to extend this lease for two additional five-year periods after the initial term.

Our contractual obligations primarily consist of our obligations under non-cancellable operating and finance leases and contracts we enter into in the normal course of business with clinical research organizations for clinical studies, with contract manufacturing

organizations for clinical supplies, and with other vendors for preclinical studies and supplies and other services and products for operating purposes. These contracts generally provide for termination on notice, with the exception of one of our contract manufacturing agreements which we may terminate for convenience upon six months' written notice.

Cash Flows

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

	Year Ended December 31,		
	2021	2020	2019
	(in thousands)		
Net cash (used in) provided by:			
Operating activities	$ (220,522)	$ (180,759)	$ (235,626)
Investing activities	22,258	(120,728)	60,459
Financing activities	103,944	427,574	188,786
Net increase (decrease) in cash, cash equivalents and restricted cash	$ (94,320)	$ 126,087	$ 13,619

Operating activities

Net cash used in operating activities was $220.5 million in 2021 as compared to $180.8 million in 2020. The increase of $39.7 million was primarily due to an increase in net loss of $33.5 million and increased usage of net working capital, partially offset by $45.0 million received as a result of the Pierre Fabre Commercialization Agreement.

Net cash used in operating activities was $180.8 million in 2020 as compared to $235.6 million in 2019. The decrease of $54.9 million was primarily due to $52.9 million received as a result of the Bayer License Agreement, a $14.9 million increase in other net operating liabilities and a $2.2 million increase in the amortization of investment premiums, partially offset by a $15.6 million increase in net loss.

Investing activities

Net cash provided by investing activities in 2021 consisted primarily of $334.0 received from maturities and sales of available-for-sale securities, partially offset by $301.1 million used to purchase available-for-sale securities and $10.6 million in purchases of property and equipment.

Net cash used in investing activities in 2020 consisted primarily of $425.9 million used to purchase available-for-sale securities and $4.5 million in purchases of property and equipment, partially offset by $309.7 million received from maturities and sales of available-for-sale securities.

Net cash provided by investing activities in 2019 consisted primarily of $336.3 million received from maturities and sales of available-for-sale securities, partially offset by $270.2 million used to purchase available-for-sale securities and $5.7 million in purchases property and equipment.

Financing activities

Net cash provided by financing activities in 2021 consisted primarily of $98.7 million of net proceeds from ATM facilities and $6.8 million of net proceeds from employee stock award transactions, partially offset by $1.2 million of taxes paid related to the net share settlement of RSUs.

Net cash provided by financing activities in 2020 consisted primarily of $353.8 million of aggregate net proceeds received from the two underwritten public offerings of common stock and pre-funded warrants, $69.2 million of net proceeds from ATM facilities and $6.7 million of net proceeds from employee stock award transactions, partially offset by $1.5 million of taxes paid related to the net share settlement of RSUs.

Net cash provided by financing activities in 2019 consisted primarily of $140.9 million of net proceeds received from an underwritten public offering of common stock and pre-funded warrants, $47.7 million of net proceeds from ATM facilities and $7.4

million of net proceeds from employee stock award transactions, partially offset by $6.7 million of taxes paid related to the net share settlement of RSUs.

Operating Capital Requirements and Plan of Operations

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

We expect that existing cash, cash equivalents and short-term investments as of December 31, 2021 together with the anticipated $100.0 million from FUJIFILM Diosynth Biotechnologies California Inc. (FDB), payable upon closing of the strategic transaction with FDB, will be sufficient to fund our planned operations into the fourth quarter of 2023. See Note 12 – Subsequent Events for further information. In order to complete the process of obtaining regulatory approval for any of our product candidates and to build the sales, marketing and distribution infrastructure that we believe will be necessary to commercialize our product candidates, if approved, we will require substantial additional funding. In addition, we expect to continue to opportunistically seek access to additional funds through additional public or private equity offerings or debt financings, through potential collaborations, partnering or other strategic arrangements, or a combination of the foregoing.

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

- the timing, costs and results of our ongoing and planned clinical and preclinical studies for our product candidates;
- 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 timing of proceeds from the Bayer License Agreement and the Pierre Fabre Commercialization Agreement, as well as the terms and timing of any future collaborations, licensing, consulting or other arrangements that we may establish;
- the amount and timing of any payments we may be required to make in connection with the licensing, filing, prosecution, maintenance, defense and enforcement of any patents or patent applications or other intellectual property rights;
- the extent to which we in-license or acquire other products and technologies; and
- the timing of capital expenditures, including the qualification of our manufacturing facility.

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

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

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Interest Rate and Market Risk

We are exposed to market risk related to changes in interest rates. As of December 31, 2021, we had total cash, cash equivalents and short-term investments of $371.1 million. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because our investments are in short-term securities. Our available-for-sale securities are subject to interest rate risk and will fall in value if market interest rates increase, which could result in a realized loss if we are forced to sell an investment before its scheduled maturity. We currently do not hedge our interest rate risk exposure.Due to the short-term duration of our investment portfolio and the low risk profile of our investments, an immediate change in interest rates of 10 basis points would not result in a significant change in the fair market value of our portfolio.

The primary objective of our investment activities is to preserve principal while at the same time maximizing the income we receive from our investments without significantly increasing risk. To achieve this objective, we maintain our portfolio of cash equivalents and short-term and long-term investments in a variety of securities, including money market funds, U.S. Treasury, government agency and corporate debt obligations, commercial paper and asset-backed securities. These securities are all classified as available-for-sale and consequently are recorded on the balance sheet at fair value, with unrealized gains or losses reported as a separate component of accumulated other comprehensive income (loss). Our holdings of the securities of any one issuer, except for obligations of the U.S. Treasury, U.S. Treasury-guaranteed securities or money market funds, do not exceed 5% of our portfolio.

Item 8. Financial Statements and Supplementary Data

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the stockholders and the Board of Directors of Atara Biotherapeutics, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Atara Biotherapeutics, Inc. and subsidiaries (the "Company") as of December 31, 2021 and 2020, the related consolidated statements of operations and comprehensive loss, stockholders' equity, and cash flows, for each of the three years in the period ended December 31, 2021, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 28, 2022, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue and Deferred Revenue – Accounting for Out- License Agreement – Refer to Note 2 and 7 to the Financial Statements

Critical Audit Matter Description

The Company has entered into certain out-license agreements with Bayer and Pierre Fabre.

During 2021, the Company entered into a Technology Transfer Agreement and a Manufacturing and Supply Agreement with Bayer AG ("Bayer"), both of which were contemplated as part of the existing Bayer License Agreement. Under the terms of these agreements, the company will be responsible for technology transfer services, supply of materials required for technology transfer services, and for manufacturing, storage, and distribution of therapies to Bayer.

Additionally, during 2021, the Company entered into a commercialization agreement with Pierre Fabre Medicament ("Pierre Fabre"). Under the terms of the agreement, the Company granted Pierre Fabre a license to commercialize and distribute therapies and will be responsible for manufacturing and supplying the therapies to Pierre Fabre, along with related cell selection services.

The Company recognizes revenue on out-license agreements as they satisfy their performance obligations and when a customer obtains control of the promised goods or services. As of December 31, 2021, the Company recognized $20.3 million of revenue under the out-license agreements and deferred revenue amounted to $96.5 million, of which $40.8 million is included in current liabilities and $55.7 million is included in long-term liabilities.

We identified accounting for the out-license agreements, the revenue recognized, and the estimated deferred revenue to be recognized as revenue over time as a critical audit matter. Given the judgments necessary to determine the accounting literature to apply to an out-license agreement, the method to estimate and measure the progress toward the completion of the performance obligation and the estimated contractual term over which the performance obligation would be completed, auditing such judgments and estimates required extensive audit effort due to the complexity of the out-license agreements and the high degree of auditor judgment applied when performing audit procedures and evaluating the results of those procedures.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to determining the accounting literature to apply to the agreements and, where applicable, assessing management's estimates of costs used in the cost-based input method for measuring progress included the following, among others:

- We tested the operating effectiveness of controls over out-license related revenue, including those related to the identification of distinct performance obligations and the determination of the timing and amount of revenue recognized.
- We reviewed and obtained an understanding of the Company's revenue generating agreements and related transactions during and at the end of the year via review of internal and external presentations, news and publications, and discussions with management.
- We evaluated management's determination that the agreement is within the scope of ASC 606.
- We tested management's identification of the performance obligation(s) by evaluating whether the promises were highly interdependent and interrelated
- We evaluated management's determination of the contractual term and the appropriateness of management's method to measure its progress over that term.
- We evaluated the assumptions used in the estimates of total costs and the estimated measure of progress for recognizing revenues over time revenue by:
    - Performing corroborating inquiries with the Company's project and business development managers, and comparing the assumptions used in the estimates to management's work plans and cost estimates, and costs reported to date
    - Comparing costs incurred for activities completed to date to the costs forecasted for those activities.
    - Testing the mathematical accuracy of management's revenue and current and long-term deferred revenue balances based on the estimated revenue to be recognized over time.

Accrued Research and Development Expenses & Prepaid Research and Development Expenses (Clinical Trial Accrued and Prepaid Expenses) - Refer to Note 2 to the financial statements

Critical Audit Matter Description

The Company recognizes costs it incurs for preclinical studies, clinical studies, and manufacturing activities as research and development expenses based on an evaluation of its vendors' progress toward completion of specific tasks. Payment timing may differ significantly from the period in which the costs are recognized as expense. Costs that are paid in advance are deferred as a prepaid expense and amortized over the service period as the services are provided. Costs for services incurred that have not yet been be paid are recognized as accrued expenses.

In estimating the vendors' progress toward completion of specific tasks, the Company uses data such as patient enrollment, clinical site activations or vendor information of actual costs incurred. This data is obtained through reports from or discussions with Company personnel and outside service providers as to the progress or state of completion of trials, or the completion of services.

Given the number of ongoing preclinical study, clinical study, and manufacturing activities and the subjectivity involved in estimating clinical study accrued and prepaid expenses, auditing the clinical study accruals and prepaid expenses involved especially subjective judgment.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to clinical study accrued and prepaid expenses included the following, among others:

- We tested the design and effectiveness of controls over the estimation of clinical study accrued and prepaid expenses.
- We obtained and read a sample of research, collaboration, and manufacturing agreements and contracts, as well as amendments thereto.
- We evaluated publicly available information (such as press releases and investor presentations) and board of directors' materials regarding the status of clinical trial and manufacturing activities.
- We obtained the listing of all contracts related to research and development expenses to evaluate the completeness of accruals and prepaid expenses.
- For a sample of agreements and contracts, we compared the amount of accrual or prepaid expenses at the end of the prior period to current year activity and evaluated the accuracy of the Company's estimation methodology.
- We obtained a written confirmation of the ending inventory balance held at the Company's manufacturing vendor.
- We made selections of specific amounts recognized as research and development expense as well as those recognized as accrued and prepaid expenses to evaluate management's estimate of the vendor's progress and performed the following procedures:
    - Read the related statement of work, purchase order, or other supporting documentation (such as communications between the Company and vendors).
    - Performed corroborating inquiries with Company clinical operations and manufacturing operations personnel.
    - Confirmed progress directly with the vendor and compared the reported amounts to the Company's estimate.
    - Evaluated management's judgments compared to the evidence obtained.

/s/ *DELOITTE & TOUCHE LLP*

San Francisco, California
February 28, 2022

We have served as the Company's auditor since 2013.

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

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 106,084	$ 200,404
Short-term investments	264,984	300,255
Restricted cash - short-term	194	194
Accounts receivable	986	1,250
Prepaid expenses and other current assets	12,373	21,170
Total current assets	384,621	523,273
Property and equipment, net	53,780	50,517
Operating lease assets	26,159	12,303
Restricted cash - long-term	1,200	1,200
Other assets	2,367	827
Total assets	$ 468,127	$ 588,120
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 17,368	$ 7,118
Accrued compensation	25,150	20,458
Accrued research and development expenses	13,451	15,813
Deferred revenue	40,760	33,455
Other current liabilities	9,057	6,057
Total current liabilities	105,786	82,901
Deferred revenue - long-term	55,708	27,795
Operating lease liabilities - long-term	25,518	13,041
Other long-term liabilities	1,501	2,044
Total liabilities	188,513	125,781
Commitments and contingencies (Note 9)		
Stockholders' equity:		
Common stock—$0.0001 par value, 500,000 shares authorized as of December 31, 2021 and 2020, respectively; 91,671 and 83,372 shares issued and outstanding as of December 31, 2021 and 2020, respectively	9	8
Additional paid-in capital	1,744,695	1,586,616
Accumulated other comprehensive (loss) income	(368)	296
Accumulated deficit	(1,464,722)	(1,124,581)
Total stockholders' equity	279,614	462,339
Total liabilities and stockholders' equity	$ 468,127	$ 588,120

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

	Years Ended December 31,		
	2021	2020	2019
License and collaboration revenue	$ 20,340	$ —	$ —
Operating expenses:			
Research and development	282,001	244,650	216,097
General and administrative	78,801	64,402	79,584
Total operating expenses	360,802	309,052	295,681
Loss from operations	(340,462)	(309,052)	(295,681)
Interest and other income, net	367	2,447	4,717
Loss before provision for income taxes	(340,095)	(306,605)	(290,964)
Provision for income taxes	46	15	12
Net loss	$ (340,141)	$ (306,620)	$ (290,976)
Other comprehensive (loss) gain:			
Unrealized (loss) gain on available-for-sale securities	(664)	76	560
Comprehensive loss	$ (340,805)	$ (306,544)	$ (290,416)
Net loss per common share:			
Basic and diluted net loss per common share	$ (3.63)	$ (4.15)	$ (5.67)
Weighted-average shares outstanding used to calculate basic and diluted net loss per common share	93,670	73,973	51,308

ATARA BIOTHERAPEUTICS, INC.
Consolidated Statements of Stockholders' Equity
(In thousands)

	Common Stock		Additional Paid-in	Accumulated Other Comprehensive	Accumulated	Total Stockholders'
	Shares	Amount	Capital	(Loss) Income	Deficit	Equity
Balance as of January 1, 2019	45,951	$ 5	$ 866,541	$ (340)	$ (526,985)	$ 339,221
Issuance of common stock through underwritten offerings, net of offering costs of $284	6,872	1	140,715	—	—	140,716
Issuance of common stock through ATM facilities, net of commissions and offering costs of $1,553	3,135	—	48,909	—	—	48,909
RSU settlements, net of shares withheld	361	—	(6,695)	—	—	(6,695)
Issuance of common stock pursuant to employee stock awards	487	—	7,350	—	—	7,350
Stock-based compensation expense	—	—	51,696	—	—	51,696
Net loss	—	—	—	—	(290,976)	(290,976)
Unrealized gain on available-for-sale securities	—	—	—	560	—	560
Balance as of December 31, 2019	56,806	6	1,108,516	220	(817,961)	290,781
Issuance of common stock and pre-funded warrants through underwritten offering, net of offering costs of $583	20,060	2	353,586	—	—	353,588
Issuance of common stock through ATM facilities, net of commissions and offering costs of $1,887	4,786	—	68,004	—	—	68,004
Exercise of pre-funded warrants	57	—	—	—	—	—
RSU settlements, net of shares withheld	1,112	—	(1,521)	—	—	(1,521)
Issuance of common stock pursuant to employee stock awards	551	—	6,680	—	—	6,680
Stock-based compensation expense	—	—	51,351	—	—	51,351
Net loss	—	—	—	—	(306,620)	(306,620)
Unrealized gain on available-for-sale securities	—	—	—	76	—	76
Balance as of December 31, 2020	83,372	8	1,586,616	296	(1,124,581)	462,339
Issuance of common stock through ATM facilities, net of commissions and offering costs of $2,501	6,241	1	98,696	—	—	98,697
RSU settlements, net of shares withheld	1,492	—	(1,244)	—	—	(1,244)
Issuance of common stock pursuant to employee stock awards	566	—	6,762	—	—	6,762
Stock-based compensation expense	—	—	53,865	—	—	53,865
Net loss	—	—	—	—	(340,141)	(340,141)
Unrealized loss on available-for-sale securities	—	—	—	(664)	—	(664)
Balance as of December 31, 2021	91,671	$ 9	$ 1,744,695	$ (368)	$ (1,464,722)	$ 279,614

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

	Year Ended December 31,		
	2021	**2020**	**2019**
Operating activities			
Net loss	$ (340,141)	$ (306,620)	$ (290,976)
Adjustments to reconcile net loss to net cash used in operating activities:			
Stock-based compensation expense	53,865	51,351	51,696
Depreciation and amortization expense	9,345	8,332	7,070
Non-cash operating lease expense	1,948	1,457	964
Amortization (accretion) of investment premiums (discounts)	1,769	828	(1,330)
Loss on disposals of property and equipment	21	130	1,027
Asset retirement obligation accretion expense	87	78	71
Changes in operating assets and liabilities:			
Accounts receivable	264	(1,250)	—
Prepaid expenses and other current assets	8,182	(8,666)	(998)
Operating lease assets	—	886	239
Other assets	(1,727)	(219)	322
Accounts payable	9,067	(815)	4,213
Accrued compensation	4,692	5,752	4,070
Accrued research and development expenses	(2,362)	7,472	(10,869)
Other current liabilities	1,618	(187)	(394)
Deferred revenue	35,218	61,250	—
Operating lease liabilities	(1,859)	(1,316)	(731)
Other long-term liabilities	(509)	778	—
Net cash used in operating activities	(220,522)	(180,759)	(235,626)
Investing activities			
Purchases of short-term investments	(301,129)	(425,868)	(270,230)
Proceeds from maturities and sales of short-term investments	333,967	309,653	336,261
Purchases of property and equipment	(10,580)	(4,513)	(5,733)
Proceeds from sale of property and equipment	—	—	161
Net cash provided by (used in) investing activities	22,258	(120,728)	60,459
Financing activities			
Proceeds from sale of common stock and pre-funded warrants in underwritten offerings, net	—	353,780	140,888
Proceeds from issuance of common stock through ATM facilities, net	98,697	69,189	47,729
Proceeds from employee stock awards	6,762	6,680	7,350
Taxes paid related to net share settlement of restricted stock units	(1,244)	(1,521)	(6,695)
Principal payments on finance and capital lease obligations	(254)	(389)	(486)
Other financing activities, net	(17)	(165)	—
Net cash provided by financing activities	103,944	427,574	188,786
Increase (decrease) in cash, cash equivalents and restricted cash	(94,320)	126,087	13,619
Cash, cash equivalents and restricted cash at beginning of period	201,798	75,711	62,092
Cash, cash equivalents and restricted cash at end of period	$ 107,478	$ 201,798	$ 75,711
Non-cash investing and financing activities			
Property and equipment purchases included in accounts payable and other accrued liabilities	$ 2,139	$ 326	$ 276
Accrued costs related to underwritten public offering	$ —	$ 192	$ 172
Accrued costs related to ATM facility	$ 87	$ —	$ —
Proceeds from issuance of common stock through ATM facilities not yet received	$ —	$ —	$ 1,185
Supplemental cash flow disclosure			
Cash paid for interest	$ 32	$ 62	$ 50
Cash paid for income taxes	$ 15	$ 10	$ —

1. Description of Business

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

We have several T-cell immunotherapies in clinical development and are progressing multiple next-generation allogeneic chimeric antigen receptor T-cell ("CAR T") programs. Our most advanced T-cell immunotherapy program, tab-cel® (tabelecleucel), is currently in Phase 3 development, and in October 2021, we entered into a commercialization agreement ("Pierre Fabre Commercialization Agreement") with Pierre Fabre Medicament ("Pierre Fabre"), pursuant to which we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia, following regulatory approval. Atara will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America. See Note 7 for further information. In December 2020, we entered into a research, development and license agreement ("Bayer License Agreement") with Bayer AG ("Bayer") pursuant to which we granted to Bayer an exclusive, field-limited license under the applicable patents and know-how owned or controlled by us and our affiliates covering or related to ATA2271 and ATA3271. In March 2021, as contemplated under the Bayer License Agreement and to further advance our collaboration, we entered into (i) a Manufacturing and Supply Agreement; (ii) a Pharmacovigilance Agreement; (iii) a Quality Agreement; and (iv) a Technology Transfer Agreement (collectively, the Bayer License Agreement, the Manufacturing and Supply Agreement and the Technology Transfer Agreement are referred to as the "Bayer Agreements"). See Note 7 for further information.

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

2. Summary of Significant Accounting Policies

Basis of Presentation

We prepare our consolidated financial statements in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and follow the rules and regulations of the U.S. Securities and Exchange Commission ("SEC").

Principles of Consolidation

The consolidated financial statements include the accounts of Atara and our wholly owned subsidiaries. All intercompany balances and transactions are eliminated in consolidation.

Segment and Geographic Information

We operate and manage our business as one operating and reportable segment, which is the business of developing and commercializing therapeutics. Our Chief Executive Officer, who is our chief operating decision maker, reviews financial information on an aggregate basis for purposes of allocating resources and evaluating financial performance. Substantially all of our assets are located in the U.S.

Of the $20.3 million license and collaboration revenue recognized in 2021, $19.8 million related to our agreements with Bayer, a German company, and $0.5 million related to our agreements with Pierre Fabre, a French company.

Liquidity Risk

We have incurred significant operating losses since inception and have relied primarily on public and private equity financings and receipts from license and collaboration agreements to fund our operations. As we continue to incur losses, our transition to profitability will depend on the successful development, approval and commercialization of product candidates and on the achievement of sufficient revenues to support our cost structure. We may never achieve profitability, and unless and until we do, we will need to continue to raise additional capital. We expect that existing cash, cash equivalents and short-term investments as of December 31, 2021 will be sufficient to fund our planned operations for at least the next twelve months from the date of issuance of these financial statements.

Concentration of Credit Risk and Other Uncertainties

We place cash and cash equivalents in the custody of financial institutions that management believes are of high credit quality, the amount of which at times, may be in excess of the amount insured by the Federal Deposit Insurance Corporation. We also make short-term investments in money market funds; U.S. Treasury, government agency and corporate debt obligations; commercial paper; certificates of deposit; and asset-backed securities, which can be subject to certain credit risk. However, we mitigate the risks by investing in high-grade instruments, limiting our exposure to any one issuer and monitoring the ongoing creditworthiness of the financial institutions and issuers.

We are subject to certain risks and uncertainties and believe that changes in any of the following areas could have a material adverse effect on future financial position or results of operations: our ability to obtain future financing; regulatory approval and market acceptance of, and reimbursement for, our product candidates, if approved by applicable regulatory authorities; our ability to collect amounts due from our collaboration partners, future customers or distribution partners; performance of third-party clinical research organizations and manufacturers upon which we rely; development of sales channels; protection of our intellectual property; litigation or claims against us based on intellectual property, patent, product, regulatory or other factors; and our ability to attract and retain employees necessary to support our growth.

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 revenue recognition, clinical study and other accruals, stock-based compensation expense and income taxes. Actual results could differ materially from those estimates.

Foreign Currency

Transactions and monetary assets and liabilities that are denominated in a foreign currency are translated into U.S. dollars at the current exchange rate on the transaction date and as of each balance sheet date, respectively, with gains or losses on foreign exchange changes recognized in interest and other income (expense), net in the consolidated statements of operations and comprehensive loss. Foreign currency-denominated monetary assets and liabilities as of December 31, 2021 were not material.

Cash Equivalents and Short-Term Investments

Cash equivalents are defined as short-term, highly liquid investments with original maturities of90 days or less at the date of purchase, and generally consist of money market funds, U.S. Treasury, government agency and corporate debt obligations, and commercial paper.

Investments with original maturities of greater than90 days are classified as short-term investments on the balance sheet, and consist primarily of U.S. Treasury, government agency and corporate debt obligations, commercial paper and asset-backed securities.

As our entire investment portfolio is considered available for use in current operations, we classify all investments as available-for-sale and as current assets, even though the stated maturity may be more than one year from the current balance sheet date. Available-for-sale securities are carried at fair value, with unrealized gains and losses reported in accumulated other comprehensive loss, which is a separate component of stockholders' equity in the consolidated balance sheet.

The amortized cost of securities is adjusted for amortization of premiums and accretion of discounts to maturity, which are both recorded to interest and other income (expense), net in the consolidated statements of operations and comprehensive loss.

Changes in the fair value of available-for-sale securities impact the consolidated statements of operations and comprehensive loss only when such securities are sold, if an allowance for credit losses is recognized or if an impairment is recognized. Realized gains and losses on the sale of securities are determined by specific identification of each security's cost basis. We regularly review our investment portfolio to determine if any security is impaired, which would require us to record an allowance for credit losses or impairment charge in the period any such determination is made. In making this judgment, we evaluate, among other things, the duration and extent to which the fair value of a security is less than its cost, our intent to sell or whether it is more likely than not that we will be required to sell the security before recovery of its amortized cost basis, the financial condition of the issuer and any changes thereto, and, as necessary, the portion of a decline in fair value that is credit-related. This assessment could change in the future due to new developments or changes in assumptions related to any particular security. Realized gains and losses, allowances for credit losses and impairments on available-for-sale securities, if any, are recorded to interest and other income, net in the statements of operations and comprehensive loss.

Fair Value Measurement

The carrying amounts of certain of our financial instruments including cash equivalents, accounts receivable, prepaid expenses and other current assets, accounts payable and accrued liabilities approximate fair value due to their short maturities. Short-term investments are comprised of available-for-sale securities, which are carried at fair value.

Fair Value of 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 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.

Property and Equipment, net

Property and equipment are stated at cost and depreciated using the straight-line method over the estimated useful lives of the assets, ranging fromthree to five years. Costs incurred to acquire, construct or install property and equipment during the construction stage of a capital project or costs incurred to purchase and develop internal use software during the application development stage are recorded as construction in progress. Leasehold improvements are amortized over the lesser of the life of the leasehold improvements or the lease term. Maintenance and repairs are charged to operations as incurred.

Long-lived Assets

We evaluate the carrying amount of our long-lived assets whenever events or changes in circumstances indicate that the assets may not be recoverable. An impairment loss would be recognized when estimated future cash flows expected to result from the use of the asset and its eventual disposition are less than the carrying amount of the asset. To date, there have been no such impairment losses.

Asset Retirement Obligations ("ARO")

ARO are legal obligations associated with the retirement of long-lived assets pertaining to leasehold improvements. These liabilities are initially recorded at fair value and the related asset retirement costs are capitalized by increasing the carrying amount of the related assets by the same amount as the liability. Asset retirement costs are subsequently depreciated over the useful lives of the related assets. Subsequent to initial recognition, the Company records period-to-period changes in the ARO liability resulting from the passage of time and revisions to either the timing or the amount of the original estimate of undiscounted cash flows. The Company derecognizes ARO liabilities when the related obligations are settled.

Leases

We determine if an arrangement is a lease at inception in accordance with Accounting Standards Update ("ASU") No. 2016-02,*Leases (Topic 842)*. Operating leases are included in operating lease assets, other current liabilities, and operating lease liabilities on our consolidated balance sheets. Leases with an initial term of 12 months or less are not recorded on the balance sheet; we recognize short-term lease expense for these leases on a straight-line basis over the lease term. Finance leases are included in other assets, other current liabilities, and other long-term liabilities on our consolidated balance sheets.

Lease assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. The lease term includes renewal options that we are reasonably certain of exercising as of the commencement date. None of the lease terms used to calculate the future minimum lease payments at commencement date include renewal options. 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. Lease assets also includes any lease payments made and excludes lease incentives and initial direct costs incurred. Operating lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. Finance lease assets are amortized over the shorter of the lease term or the asset's estimated useful life.

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.

Revenue Recognition

At inception, we determine whether contracts are within the scope of Accounting Standards Codification Topic 606 (ASU No. 2014-09),*Revenue from Contracts with Customers*, and all subsequent amendments (collectively, "ASC 606") or other topics. For contracts that are determined to be within the scope of ASC 606, revenue is recognized when a customer obtains control of promised goods or services. The amount of revenue recognized reflects the consideration to which we expect to be entitled to receive in exchange for these goods and services. To achieve this core principle, we apply the following five steps (i) identify the contract with the customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when or as we satisfy a performance obligation. We only apply the five-step model to contracts when we determine that collection of substantially all consideration for goods and services that are transferred is probable based on the customer's intent and ability to pay the promised consideration.

Performance obligations promised in a contract are identified based on the goods and services that will be transferred to the customer that are both capable of being distinct and are distinct in the context of the contract. To the extent a contract includes multiple promised goods and services, we apply judgment to determine whether promised goods and services are both capable of being distinct and distinct in the context of the contract. If these criteria are not met, the promised goods and services are accounted for as a combined performance obligation.

The transaction price is determined based on the consideration to which we will be entitled in exchange for transferring goods and services to the customer. To the extent the transaction price includes variable consideration, we estimate the amount of variable consideration that should be included in the transaction price utilizing either the expected value method or the most likely amount method, depending on the nature of the variable consideration. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. Any estimates, including the effect of the constraint on variable consideration, are evaluated at each reporting period for any changes. Determining the transaction price requires significant judgment, which is discussed in further detail for our out-license agreements in Note 7. Our out-license agreements do not contain a significant financing component.

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation on a relative standalone selling price basis unless the transaction price is variable and meets the criteria to be allocated entirely to a performance obligation or to a distinct service that forms part of a single performance obligation. The consideration to be received is allocated among the separate performance obligations based on relative standalone selling prices. We typically determine standalone selling prices using an adjusted market assessment approach model.

We satisfy performance obligations either over time or at a point in time. Revenue is recognized over time if either (i) the customer simultaneously receives and consumes the benefits provided by our performance, (ii) our performance creates or enhances an asset that the customer controls as the asset is created or enhanced or (iii) our performance does not create an asset with an alternative use to the entity and we have an enforceable right to payment for performance completed to date. We evaluate the measure of progress each reporting period and, if necessary, adjust the measure of performance and related revenue recognition. If we do not satisfy a performance obligation over time, the related performance obligation is satisfied at a point in time by transferring control of a promised good or service to a customer.

As of December 31, 2021, our deferred revenue is related to the Bayer Agreements and the Pierre Fabre Commercialization Agreement, which are both within the scope of ASC 606. As discussed in further detail in Note 7, the terms of these arrangements include potential payments to us for some or all of the following: nonrefundable, upfront fees; development, regulatory, and commercial milestone payments; research and development funding payments; and royalties on the net sales of licensed products. These payments relate to promised goods or services for which revenue will be recognized upon our satisfaction of the underlying performance obligations.

Licenses of intellectual property: If the license of our intellectual property is determined to be distinct from the other performance obligations identified in an arrangement, we recognize revenues from consideration allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are combined with other promises, we utilize judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue.

Upfront payments: Upfront payments and fees are recorded as deferred revenue upon receipt or when due and may require deferral of revenue recognition to a future period until the we have satisfied our obligations under these arrangements.

Milestone payments: At the inception of each arrangement that includes development milestone payments, the Company evaluates the probability of reaching the milestones and estimates the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur in the future, the associated milestone value is included in the transaction price. Milestone payments that are not within the control of the Company or the licensee, such as regulatory approvals, are not considered probable of being achieved until those approvals are received and therefore revenue recognized is constrained as management is unable to assert that a significant reversal of revenue would not be probable. The transaction price is then allocated to each performance obligation on a relative standalone selling price basis, for which the Company recognizes revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the probability of achievement of such development milestones and any related constraint and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect license and collaboration revenues and the consolidated statements of operations and comprehensive loss in the period of adjustment.

Royalties: For arrangements that include sales-based royalties, including milestone payments based on levels of sales, if the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied, or partially satisfied. To date, we have not recognized any royalty revenue resulting from our out-licensing agreements.

Certain judgments affect the application of our revenue recognition policy. For example, we record short-term and long-term deferred revenue based on our best estimate of when such revenue will be recognized. Short-term deferred revenue consists of amounts that are expected to be recognized as revenue in the next 12 months, and long-term deferred revenue consists of amounts that we do not expect will be recognized in the next 12 months. This estimate is based on our current operating plan and, if our operating plan should change in the future, we may recognize a different amount of deferred revenue over the next 12-month period.

Contract Balances

We receive payments from our customers based on billing schedules established in each contract. Amounts payable to us are recorded as accounts receivable when our right to consideration is unconditional. Our contract liabilities consist of deferred revenue.

Stock-Based Compensation Expense

We account for stock-based compensation expense, including the expense of restricted common stock awards ("RSAs"), grants of restricted stock units ("RSUs"), and stock options that may be settled in shares of our common stock, based on the fair values of the equity instruments issued. The fair value is determined on the measurement date, which is generally the date of grant. The fair value of our RSUs is measured at the closing market price of our common stock on the measurement date. The fair value for our stock option awards is determined at the grant date using the Black-Scholes valuation model. For awards with performance-based vesting criteria, we assess the probability of the achievement of the performance conditions at the end of each reporting period and begin to recognize the share-based compensation costs when it becomes probable that the performance conditions will be met. For awards that are subject to both service and performance conditions, no expense is recognized until it is probable that performance conditions will be met. Stock-based compensation expense for awards with time-based vesting criteria is recognized as expense on a straight-line basis over the requisite service period. Stock-based compensation expense for awards with performance and other vesting criteria is recognized as expense under an accelerated graded vesting model.

Key assumptions used in the Black-Scholes valuation model used for employee stock awards include:

Expected term – We derived the expected term using the "simplified" method (the expected term is determined as the average of the time-to-vesting and the contractual life of the options), as we have limited historical information to develop expectations about future exercise patterns and post vesting employment termination behavior.

Expected volatility – Prior to 2021, expected volatility was estimated using comparable public companies' volatility for similar terms.Beginning in 2021, volatility is estimated using an average of Atara's historical volatility and comparable public companies' volatility for similar terms.

Expected dividend – We have not historically declared or paid dividends to our stockholders and have no plans to pay dividends; therefore, we assumed an expected dividend yield of 0%.

Risk-free interest rate – The risk-free interest rate is based on the yield on U.S. Treasury securities with the expected term of the associated award.

The fair value of our common stock is measured at the closing market price on the measurement date.We account for forfeitures of stock-based awards as they occur.

Research and Development Expense

Research and development expense consists of costs incurred in performing research and development activities, including 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 clinical and preclinical studies; the costs of acquiring and manufacturing clinical study materials and other supplies; payments under licensing and research and development agreements; other outside services and consulting costs, and facilities, information technology and overhead expenses. Research and development costs are expensed as incurred.

Clinical Study Accruals

Costs for preclinical studies, clinical studies and manufacturing activities are recognized based on an evaluation of our vendors' progress towards completion of specific tasks, using data such as patient enrollment, clinical site activations or information provided to us by our vendors regarding their actual costs incurred. Payments for these activities are based on the terms of individual contracts and payment timing may differ significantly from the period in which the services are performed. We determine accrual estimates through reports from and discussions with applicable personnel and outside service providers as to the progress or state of completion of studies, or the services completed. Our estimates of accrued expenses as of each balance sheet date are based on the facts and circumstances known at the time. Costs that are paid in advance of performance are deferred as a prepaid expense and amortized over the service period as the services are provided.

Defined Contribution Plan

We have one qualified 401(k) plan covering all eligible employees. Under the plan, employees may contribute up to the statutory allowable amount for any calendar year. We make matching contributions, equal to 50% of each dollar contributed up to the first6% of an individual's eligible earnings, up to the annual IRS maximum. For the years ended December 31, 2021, 2020, and 2019 we recorded matching contributions of approximately $2.6 million, $2.1 million, and $1.6 million, respectively.

Other Current Liabilities

Other current liabilities consisted of the following as of each period end:

	December 31, 2021	December 31, 2020
	(in thousands)	
Accrued operating expenses	$ 5,960	$ 3,016
Current portion of operating lease liabilities	2,582	1,730
Current portion of finance lease liabilities	171	255
Other accrued liabilities	344	1,056
Total other current liabilities	$ 9,057	$ 6,057

Income Taxes

We use the asset and liability method to account for income taxes. We record deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities using enacted tax rates expected to be in effect when the differences are expected to reverse. Valuation allowances are provided when necessary to reduce net deferred tax assets to the amount that is more likely than not to be realized. Based on the available evidence, we are unable, at this time, to support the determination that it is more likely than not that our deferred tax assets will be utilized in the future. Accordingly, we recorded a full valuation allowance as of December 31, 2021 and 2020. We intend to maintain valuation allowances until sufficient evidence exists to support their reversal.

Tax benefits related to uncertain tax positions are recognized when it is more likely than not that a tax position will be sustained during an audit. Interest and penalties related to unrecognized tax benefits are included within the provision for income tax.

Comprehensive Income (Loss)

Comprehensive income (loss) is defined as a change in equity of a business enterprise during a period resulting from transactions from non-owner sources. Our other comprehensive income (loss) is comprised solely of unrealized gains (losses) on available-for-sale securities and is presented net of taxes. We have not recorded any reclassifications from other comprehensive income (loss) to net loss during any period presented.

Recent Accounting Pronouncements

We consider the applicability and impact of any recent ASU issued by the Financial Accounting Standards Board ("FASB"). Based on our assessment, the ASUs were determined to be either not applicable or are expected to have minimal impact on our condensed consolidated financial statements.

3. Net Loss per Common Share

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

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

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

	As of December 31,		
	2021	2020	2019
Unvested RSUs	5,253,347	2,868,407	1,910,764
Vested and unvested options	9,200,337	7,832,386	6,934,262
ESPP share purchase rights	27,238	26,349	20,438
Total	14,480,922	10,727,142	8,865,464

4. Financial Instruments

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 December 31, 2021:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 89,738	$ —	$ —	$ 89,738
U.S. Treasury obligations	Level 2	111,832	1	(138)	$ 111,695
Government agency obligations	Level 2	21,346	—	(23)	$ 21,323
Corporate debt obligations	Level 2	99,757	6	(190)	$ 99,573
Commercial paper	Level 2	36,993	—	—	$ 36,993
Asset-backed securities	Level 2	10,174	1	(25)	$ 10,150
Total available-for-sale securities		369,840	8	(376)	369,472
Less: amounts classified as cash equivalents		(104,488)			$ (104,488)
Amounts classified as short-term investments		$ 265,352	$ 8	$ (376)	$ 264,984

As of December 31, 2020:	Input Level	Total Amortized Cost	Total Unrealized Gain	Total Unrealized Loss	Total Estimated Fair Value
			(in thousands)		
Money market funds	Level 1	$ 168,343	$ —	$ —	$ 168,343
U.S. Treasury obligations	Level 2	230,239	113	(6)	230,346
Government agency obligations	Level 2	22,537	22	(3)	22,556
Corporate debt obligations	Level 2	50,080	166	(1)	50,245
Commercial paper	Level 2	17,990	—	—	17,990
Asset-backed securities	Level 2	9,860	10	(5)	9,865
Total available-for-sale securities		499,049	311	(15)	499,345
Less: amounts classified as cash equivalents		(199,090)	—	—	(199,090)
Amounts classified as short-term investments		$ 299,959	$ 311	$ (15)	$ 300,255

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

	As of December 31, 2021		As of December 31, 2020	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
	(in thousands)		(in thousands)	
Maturing within one year	$ 278,457	$ 278,354	$ 434,828	$ 435,023
Maturing in one to five years	91,383	91,118	64,221	64,322
Total available-for-sale securities	$ 369,840	$ 369,472	$ 499,049	$ 499,345

As of December 31, 2021, no significant facts or circumstances were present to indicate a deterioration in the creditworthiness of the issuers of the available-for-sale securities we hold, and the Company has no requirement or intention to sell these securities before maturity or recovery of their amortized cost basis. We considered the current and expected future economic and market conditions surrounding the COVID-19 pandemic and determined that our investments were not significantly impacted. For all securities with a fair value less than its amortized cost basis, we determined the decline in fair value below amortized cost basis to be immaterial and non-credit related, and therefore no allowance for losses has been recorded. During the years ended December 31, 2021, 2020 and 2019, we did not recognize any impairment losses on our investments.

We have elected the practical expedient to exclude the applicable accrued interest from both the fair value and the amortized cost basis of our available-for-sale securities for purposes of identifying and measuring an impairment. We present accrued interest receivable related to our available-for-sale securities in prepaid expenses and other current assets, separate from short-term investments on our consolidated balance sheet. As of December 31, 2021 and 2020, accrued interest receivable was $0.8 million and $0.7 million, respectively. Our accounting policy is to not measure an allowance for credit losses for accrued interest receivables and to write-off any uncollectible accrued interest receivable as a reversal of interest income in a timely manner, which we consider to be in the period in which we determine the accrued interest will not be collected by us. We have not written off any accrued interest receivables for the years ended December 31, 2021, 2020 and 2019.

In addition, restricted cash collateralized by money market funds is a financial asset measured at fair value and is a Level 1 financial instrument under the fair value hierarchy. As of December 31, 2021 and 2020, restricted cash totaled $1.4 million.

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

	December 31, 2021	December 31, 2020
	(in thousands)	
Cash and cash equivalents	$ 106,084	$ 200,404
Restricted cash - short-term	194	194
Restricted cash - long-term	1,200	1,200
Total cash, cash equivalents and restricted cash	$ 107,478	$ 201,798

5. Property and Equipment

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

	December 31, 2021	December 31, 2020
	(in thousands)	
Leasehold improvements	$ 50,142	$ 50,132
Lab equipment	14,060	8,033
Machinery and equipment	5,228	5,023
Computer equipment and software	4,245	4,060
Furniture and fixtures	2,518	2,066
Construction in progress	6,325	879
Property and equipment, gross	82,518	70,193
Less: accumulated depreciation and amortization	(28,738)	(19,676)
Property and equipment, net	$ 53,780	$ 50,517

Depreciation and amortization expense was $9.3 million, $8.3 million and $7.1 million for the years ended December 31, 2021, 2020 and 2019, respectively.

6. In-license and Manufacturing Agreements

MSK Agreements

In June 2015, we entered into an exclusive license agreement with MSK for three clinical stage T-cell therapies. We are required to make payments 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 latest of: (i) expiration of the last licensed patent rights related to each licensed product, (ii) expiration of any market exclusivity period granted by law with respect to each licensed product, and (iii) a specified number of years after the first commercial sale of the licensed product in each country. Upon expiration of the license agreement, Atara will retain non-exclusive rights to the licensed products.

In May and December 2018, we licensed additional technology from MSK. 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.

In March 2021, we amended and restated our license agreement with MSK to: (i) terminate our license to certain rights related to WT1 and cytomegalovirus ("CMV"); and (ii) license additional know-how rights not otherwise covered by our existing agreements.

QIMR Berghofer Agreements

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

Other In-license and Collaboration Agreements

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

Milestones and royalties under each of the above agreements are contingent upon future events and will be recorded as expense when it is probable that the milestones will be achieved or royalties are due. As of December 31, 2021 and 2020, there were no outstanding obligations for milestones and royalties under our license and collaboration agreements.

Cognate Manufacturing Agreement – In December 2019, we entered into a Commercial Manufacturing Services Agreement (the "Manufacturing Agreement") with Cognate Bioservices, Inc. ("Cognate"). Pursuant to the Manufacturing Agreement, Cognate provides manufacturing services for certain of our product candidates. The initial term of the Manufacturing Agreement, as amended, runs until May 31, 2022. We may terminate the Manufacturing Agreement for convenience on six months' written notice to Cognate, or immediately if Cognate is unable to perform the services under the Manufacturing Agreement or fails to obtain or maintain certain necessary approvals.

7. Out-license Agreements

Bayer Agreements

Research, Development and License Agreement

In December 2020, we entered into the Bayer License Agreement to develop mesothelin-directed CAR T-cell therapies for the treatment of solid tumors, pursuant to which we granted to Bayer an exclusive, field-limited license under the applicable patents and know-how owned or controlled by us and our affiliates covering or related to ATA2271 and ATA3271 (the "Licensed Products").

Under the terms of the Bayer License Agreement, we will be responsible at our cost for all mutually agreed preclinical and clinical activities for ATA2271 through the first in human Phase 1 clinical study in collaboration with MSK, following which Bayer will be responsible for the further development of ATA2271 at its cost. Bayer will be responsible for the development of ATA3271, except for certain mutually agreed preclinical, translational, manufacturing and supply chain activities to be performed by us relating to ATA3271, in each case at Bayer's cost. Bayer will also be solely responsible for commercializing the Licensed Products at its cost.

In December 2020, we received an upfront cash payment of $45.0 million from Bayer for the exclusive license grant, net of applicable withholding taxes, which were fully recovered in August 2021, and an additional $15.0 million upfront reimbursement payment for certain research and process development activities to be performed by us. We are also entitled to receive (i) up to $5.0 million for additional, specified translational activities under the Bayer License Agreement, of which we have invoiced $1.3 million, and (ii) an aggregate of up to $610.0 million in milestone payments upon achieving certain development, regulatory and commercial milestones relating to the Licensed Products. In addition, we are eligible to receive from Bayer tiered royalties at percentages up to low double digits on worldwide net product sales of the Licensed Products on a country-by-country and product-by-product basis until the later of 12 years after the first commercial sale in such country or the expiration of specified patent rights in such country, subject to certain reductions and aggregate minimum floors.

Bayer and we have formed a joint steering committee ("JSC") that will provide oversight, decision making and implementation guidance regarding the collaboration activities covered under the agreement.

We assessed this arrangement in accordance with ASC 606 and concluded that the promises in the Bayer License Agreement represent transactions with a customer. We concluded that the Bayer License Agreement contains the following promises: (i) a development and commercialization license; (ii) performance of early-stage research and development ("R&D") services, including technology transfer services; (iii) JSC participation; and (iv) chemistry, manufacturing and control ("CMC") services. In accordance with ASC 606, we determined that the license, early-stage R&D and CMC services were not distinct from each other, as the license, early-stage R&D and CMC services are highly interdependent upon one another. Participation on the JSC to oversee the research and development activities are combined into the single performance obligation as these activities are highly interdependent with the other R&D and CMC services. Accordingly, we determined that these promises should be combined into a single performance obligation.

The transaction price at inception consisted of a $45.0 million upfront payment for the license, $15.0 million for certain research and process development activities and the $5.0 million for additional specified translational activities, and this amount was allocated to the single performance obligation. The potential development and commercial milestone payments that we are eligible to receive were excluded from the transaction price, as all milestone amounts were fully constrained based on the probability of achievement. None of the future royalty and sales-based milestone payments were included in the transaction price, as the potential payments represent sales-based consideration. We will reevaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, and, if necessary, adjust our estimate of the transaction price.

Technology Transfer Agreement

In March 2021, we entered into a Technology Transfer Agreement with Bayer (the "Bayer Tech Transfer Agreement"), which was contemplated as part of the Bayer License Agreement, to transfer to Bayer the ATA3271 manufacturing process being developed as part of the CMC services in the Bayer License Agreement. Upon entering into the agreement, we invoiced Bayer 20 percent of the total fee of $15.3 million under the Bayer Tech Transfer Agreement, or $3.1 million, which we received in the second quarter of 2021 and invoiced 40 percent of the total fee, or $6.1 million, in January 2022. The remainder of the fee will be billed as follows: (i) 20 percent in January 2023 and (ii) 20 percent upon the technology transfer completion.

We assessed this arrangement in accordance with ASC 606 and concluded that the promises in the Bayer Tech Transfer Agreement represent transactions with a customer. We concluded that the Bayer Tech Transfer Agreement should be combined with the Bayer License Agreement and accounted for as a modification of that agreement and that the Bayer Tech Transfer Agreement contains the following promises: (i) technology transfer services and (ii) supply of materials required for the technology transfer services. In accordance with ASC 606, we determined that the technology transfer services and supply of materials required for the technology transfer services were not distinct from each other, as they are highly interdependent upon one another. In addition, we concluded that the technology transfer services and supply of materials required for the technology transfer services were highly interdependent with the license, early-stage R&D and CMC services identified in the Bayer License Agreement. Accordingly, we determined that these promises should be combined into a single performance obligation.

Under the Bayer Tech Transfer Agreement, in order to evaluate the appropriate transaction price, we determined that the $5.3 million fee constituted the entire consideration to be included in the transaction price, and this amount was allocated to the single performance obligation as identified under the Bayer License Agreement.

We utilize a cost-based input method to recognize revenue based on the amount of actual costs incurred relative to the total budgeted costs expected to be incurred for the combined performance obligation.

Manufacturing and Supply Agreement

In March 2021, we entered into a Manufacturing and Supply Agreement with Bayer (the "Bayer Manufacturing Agreement"), which was contemplated as part of the Bayer License Agreement, to manufacture Phase 1 and 2 allogeneic mesothelin-directed CAR T-cell therapies for Bayer to use in clinical trials at a price based on our costs plus a reasonable margin, which is consistent with our standalone selling price. Under the Bayer Manufacturing Agreement, we will also provide storage and distribution services to Bayer at a price that is consistent with our standalone selling price for these services.

Upon entering into the Bayer Manufacturing Agreement, Bayer submitted, and we approved, a binding purchase order for manufacturing services and storage services. Any fees for the manufacturing services will be invoiced as follows: (i) 50 percent upon written acceptance by us of the binding purchase order, and (ii) the remainder upon delivery of the certification of analysis of such lots to Bayer. Storage and distribution services are billed monthly as those services are provided to Bayer.

In March 2021, we invoiced Bayer 50 percent of the total estimated supply price of $13.1 million for manufacturing services under the initial purchase order for the supply of six lots, or $6.6 million, which we received in the second quarter of 2021. The remainder of the supply price will be billed upon the release of the lots ordered by Bayer.

We assessed this arrangement in accordance with ASC 606 and concluded that the promises in the manufacturing and supply agreement represent transactions with a customer. We concluded that the Bayer Manufacturing Agreement contains the following promises: (i) manufacturing services; (ii) storage services provided on a month-to-month basis; and (iii) distribution services. In accordance with ASC 606, we determined that the manufacturing services for the initial purchase order of six lots, that are expected to be provided prior to completion of the technology transfer, are not distinct as they are highly interdependent on the manufacturing process being developed and transferred under the Bayer License Agreement and the Bayer Tech Transfer Agreement. Accordingly, we determined that these promises should be combined into a single performance obligation. We also determined that each of the other services were distinct and separate performance obligations. We determined that the initial binding order for the manufacture and supply of six lots should be combined with the Bayer License Agreement and accounted for as a modification of that agreement along with the Bayer Tech Transfer Agreement. We also concluded that a binding purchase order from Bayer, together with the Bayer Manufacturing Agreement, form the contract for manufacturing services and storage services and a shipping order from Bayer forms the contract for distribution services. We also determined that the storage services provided on a month-to-month basis and distribution services are distinct and separate performance obligations. All the performance obligations identified above are priced at their standalone selling price.

Under the Bayer Manufacturing Agreement, in order to evaluate the appropriate transaction price, we determined that the $3.1 million fee constituted the entire consideration to be included in the transaction price, and this amount was allocated to the single performance obligation as identified under the Bayer License Agreement. Revenue for the manufacturing services for the initial six lots will be recognized based on the amount of actual costs incurred relative to the total budgeted costs expected to be incurred for the combined performance obligation. Revenue for the storage services will be recognized over time as those services are provided. Revenue for the distribution services will be recognized at a point in time when the product is delivered to a clinical site designated by Bayer.

Bayer Revenue Recognition

We utilize a cost-based input method to recognize revenue based on the amount of actual costs incurred relative to the total budgeted costs expected to be incurred for the combined performance obligation. For the year ended December 31, 2021, we recognized license and collaboration revenue of $19.8 million under the Bayer License Agreement, Bayer Tech Transfer Agreement and Bayer Manufacturing Agreement, collectively, the Bayer Agreements. We did not recognize any license and collaboration revenue in 2020 under Bayer License Agreement. Deferred revenue related to the Bayer Agreements aggregated to $51.5 million and $61.3 million as of December 31, 2021 and 2020, respectively. Of the $51.5 million of deferred revenue as of December 31, 2021, $40.8 million is included in current liabilities and $10.7 million is included in long-term liabilities. This revenue is expected to be recognized over approximately the next three years. No development or sales-based milestone payments have been earned or received through December 31, 2021.

Pierre Fabre Commercialization Agreement

In October 2021, we entered into the Pierre Fabre Commercialization Agreement, pursuant to which, we granted to Pierre Fabre an exclusive, field-limited license to commercialize and distribute tab-cel® in Europe and select emerging markets in the Middle East, Africa, Eastern Europe and Central Asia (the "Territory") following regulatory approval. Atara will retain full rights to tab-cel® in other major markets, including North America, Asia Pacific and Latin America.

We are responsible at our cost for the conclusion of the ongoing Phase 3 ALLELE clinical study and the Phase 2 multi-cohort clinical study. We will also be responsible at our cost for certain other activities directed to obtaining regulatory approval for tab-cel® for EBV-positive lymphoproliferative disease pursuant to the terms of the Pierre Fabre Commercialization Agreement in Europe and the UK. Pierre Fabre will be responsible at its cost for obtaining and maintaining all other regulatory approvals and for commercialization and distribution of tab-cel® in the Territory. We will own any intellectual property rights developed solely by us under the Agreement.

Pierre Fabre paid us an upfront cash payment of $45.0 million for the exclusive license grant in October 2021. We are also entitled to receive an aggregate of up to $318.0 million in milestone payments upon achieving certain regulatory and commercial milestones. In addition, we are eligible to receive double-digit tiered royalties as a percentage of net sales of tab-cel® until the later of 12 years after the first commercial sale in such country, the expiration of specified patent rights, or the expiration of all regulatory exclusivity for such product on a country-by-country basis.

We will negotiate a separate manufacturing and supply agreement with Pierre Fabre for us to manufacture tab-cel® for Pierre Fabre to use in the Territory based on a fixed price until January 1, 2024 and cost plus a margin post January 1, 2024. We are responsible for manufacturing and supplying Pierre Fabre with tab-cel® for commercialization in the Territory at Pierre Fabre's cost for a minimum of seven years. Following this period, we have the option to transfer the related manufacturing technology to Pierre Fabre.

We are also responsible for cell selection services at our cost until January 1, 2024 unless the parties agree to transfer the related cell selection technology to Pierre Fabre prior to this date. From January 1, 2024 onwards, if we agree to continue to provide cell selection services, it shall be at the sole expense of Pierre Fabre.

Pierre Fabre and we have formed a joint steering committee ("JSC") that will provide oversight, decision making and implementation guidance regarding the commercialization activities covered under the agreement.

We assessed this arrangement in accordance with ASC 606 and concluded that the promises in the Pierre Fabre Commercialization Agreement represent transactions with a customer. We concluded that the Pierre Fabre Commercialization Agreement includes transfer of intellectual property rights in the form of a license, the potential to manufacture and supply tab-cel® for a minimum of seven years and until tech transfer, the potential to perform cell-selection services for a minimum ofthree years and until tech transfer, and obligation to participate in the JSC. We concluded that the promises are not distinct because Pierre Fabre cannot benefit from the license without the other services and vis versa. Consequently, the license, manufacture and supply, cell selection and participation in the JSC is a single performance obligation.

Under the Pierre Fabre Commercialization Agreement, in order to evaluate the appropriate transaction price, we determined that the $45 million upfront payment, constituted the entire consideration to be included in the transaction price at the outset of the arrangement. Revenue associated with the upfront fee for the single performance obligation will be deferred until the initial delivery of services related to the manufacture and supply and cell selection and then recognized over the contract performance period . We did not recognize any of the $45.0 million upfront payment as revenue in 2021. All of the $45.0 million of deferred revenue as of December 31, 2021 is included in long-term liabilities.

The potential development and commercial milestone payments that we are eligible to receive were excluded from the transaction price, as all milestone amounts were fully constrained based on the probability of achievement. None of the future royalty and sales-based milestone payments were included in the transaction price, as the potential payments represent sales-based consideration. We will reevaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, and, if necessary, adjust our estimate of the transaction price. No development or commercial milestone payments have been earned or received through December 31, 2021.

8. Leases

We lease our corporate headquarters in South San Francisco, California under a non-cancellable lease agreement. In December 2021, we entered into a second amendment with the landlord to extend the lease term through May 2025. The amended lease agreement does not include an option to extend the lease term. In connection with the amended lease, we are required to maintain a letter of credit in the amount of $0.1 million to the landlord, a decrease of $0.1 million from the prior lease agreement, and which expires and is renewed every 12 months, and is classified as restricted cash in our consolidated balance sheet. As of December 31, 2021, we were still working to update our letter of credit and continued to report an amount of $0.2 million as restricted cash related to this letter of credit on our consolidated balance sheet.

In March 2021, we entered into a new lease agreement for approximately 33,659 square feet of office, lab and warehouse space in Thousand Oaks, California. During the third quarter of 2021, the initial 10.5-year lease term commenced, upon substantial completion of the landlord's work as defined under the agreement. The contractual obligations during the initial lease term are $21.0 million in aggregate. Base rent is subject to annual increase of 3% with each annual anniversary of the rent commencement date. We have the option to extend this lease for two additional five-year periods after the initial term.

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 is recorded as long-term restricted cash in our 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 and for which we have the option to extend the lease for an additional period of five years after the initial term. Additionally, in 2021, we entered into an amended lease agreement for our office and lab space in Aurora, Colorado, to add additional lab space. Incremental contractual obligations under the lease amendment are $0.2 million, and the lease term continues to expire in April 2024.

The maturities of lease liabilities under our operating and finance leases as of December 31, 2021 were as follows:

	Operating Leases	Finance Leases
Years Ending December 31,	(in thousands)	
2022	5,171	$ 181
2023	5,265	29
2024	5,183	—
2025	4,806	—
2026	3,257	—
Thereafter	19,004	—
Total lease payments	$ 42,686	$ 210
Less: amount representing interest	(14,586)	(10)
Present value of lease liabilities	$ 28,100	$ 200
Balance as of December 31, 2021		
Other current liabilities	$ 2,582	$ 171
Operating lease liabilities - long-term	25,518	—
Other long-term liabilities	—	29
Total	$ 28,100	$ 200

The components of lease cost were as follows:

	Year Ended December 31, 2021	Year Ended December 31, 2020	Year Ended December 31, 2019
	(in thousands)		(in thousands)
Operating lease cost:			
Operating lease cost	$ 3,827	$ 3,020	$ 2,578
Short-term lease cost	836	987	770
Total operating lease cost	$ 4,663	$ 4,007	$ 3,348
Finance lease cost:			
Amortization expense	$ 244	$ 389	$ 324
Interest on lease liabilities	29	60	56
Total finance lease cost	$ 273	$ 449	$ 380

Other information related to leases was as follows:

	Year Ended December 31, 2021	Year Ended December 31, 2020	Year Ended December 31, 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	$ 3,738	$ 2,878	$ 2,346
Operating cash flows for finance leases	32	62	50
Financing cash flows for finance leases	254	389	486
Operating lease assets obtained in exchange for lease obligations:	$ 13,427	$ —	$ 838
Finance lease assets obtained in exchange for lease obligations:	—	281	323
Non-cash increase to operating lease assets due to remeasurement of lease liabilities:	1,760	639	
Weighted Average Remaining Lease Term			
Operating leases	9.2 years	9.4 years	10.3 years
Finance leases	1.0 years	1.7 years	2.5 years
Weighted Average Discount Rate			
Operating leases	9.6%	10.3%	10.4%
Finance leases	9.7%	9.7%	10.0%

Asset Retirement Obligation

The Company's 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 in property and equipment, net and depreciated over the lease term. 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, 2020	$ 866
Accretion expense	87
Balance as of December 31, 2021	$ 953

9. Commitments and Contingencies

License and Collaboration Agreements

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

Other Research and Development Agreements

We may enter into contracts in the normal course of business with clinical research organizations for clinical trials, with contract manufacturing organizations for clinical supplies, and with other vendors for preclinical studies, supplies and other services for our operating purposes. These contracts generally provide for termination on notice. As of December 31, 2021 and 2020, there were no amounts accrued related to termination charges for minimum purchase volumes not being met.

Indemnification Agreements

In the normal course of business, we enter into contracts and agreements that contain a variety of representations and warranties and provide for indemnification for certain liabilities. The exposure under these agreements is unknown because it involves claims that may be made against us in the future but have not yet been made. To date, we have not paid any claims or been required to defend any action related to our indemnification obligations. However, we may record charges in the future as a result of these indemnification obligations. We also have indemnification obligations to our directors and executive officers for specified events or occurrences, subject to some limits, while they are serving at our request in such capacities. There have been no claims to date and we consider the fair value of these indemnification agreements to be minimal. Accordingly, we did not record liabilities for these agreements as of December 31, 2021 and 2020.

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.

10. 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 December 31, 2021 and 2020.

Equity Offerings

In July 2019, we issued and sold 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 an offering price of $15.2799 per warrant in an underwritten public offering pursuant to a shelf registration on Form S-3. The gross proceeds from this offering were $150.0 million, resulting in aggregate net proceeds of $140.7 million, after deducting underwriting discounts and commissions and offering expenses payable by us.

Each pre-funded warrant entitles the holder to purchase one share of common stock at an exercise price of $0.0001 per share and expires seven years from the date of issuance. These warrants were recorded as a component of stockholders' equity within additional paid-in capital. Per the terms of the warrant agreement, a holder of the outstanding warrants is not entitled to exercise any portion of any pre-funded warrant if, upon exercise of the warrant, the holder's ownership (together with its affiliates) of our common stock or combined voting power of our securities beneficially owned by such holder (together with its affiliates) would exceed 9.99% after giving effect to the exercise ("Maximum Ownership Percentage"). Upon at least 61 days' prior notice to us by the holder, any holder may increase or decrease the Maximum Ownership Percentage to any other percentage not to exceed 19.99%. As of December 31, 2021, 2,888,526 of the pre-funded warrants from the July 2019 offering were outstanding.

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

In December 2020, we issued and sold 5,102,041 shares of common stock at a public offering price of $24.50 per share and pre-funded warrants to purchase 2,040,816 shares of common stock at a public offering price of $24.4999 per warrant in an underwritten public offering pursuant to a shelf registration on Form S-3. The gross proceeds from this public offering were $175.0 million, resulting in net proceeds of $164.3 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

As of December 31, 2021, all of the pre-funded warrants issued and sold as part of the 2020 underwritten public offerings were outstanding.

ATM Facilities

In February 2019, we entered into a sales agreement (the "2019 ATM Facility") with Cowen, which provided 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. We paid a commission of up to 3.0% of gross sales proceeds of the common stock sold under the 2019 ATM Facility.

In February 2020, we entered into a sales agreement (the "2020 ATM Facility") with Cowen, which provides for the sale, in our sole discretion, of shares of our common stock having an aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The 2020 ATM Facility is separate from and did not replace the 2019 ATM Facility in any way. We paid a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2020 ATM Facility.

In November 2021, we entered into a sales agreement (the "2021 ATM Facility") with Cowen, which provides for the sale, in our sole discretion, of shares of our common stock having an aggregate offering price of up to $100.0 million through Cowen, as our sales agent. The 2021 ATM Facility is separate from and does not replace the 2020 ATM Facility in any way. We pay a commission of up to 3.0% of gross sales proceeds of any common stock sold under the 2021 ATM Facility.

During the fiscal year ended December 31, 2020, we sold an aggregate of 4,785,514 shares of common stock under the ATM facilities, at an average price of $14.60 per share, for gross proceeds of $69.9 million and net proceeds of $68.0 million, after deducting commissions and other offering expenses payable by us.

During the fiscal year ended December 31, 2021, we sold an aggregate of 6,240,601 shares of common stock under the ATM facilities, at an average price of $16.23 per share, for gross proceeds of $101.3 million and net proceeds of $98.9 million, after deducting commissions and other offering expenses payable by us.

The issuance and sale of these shares by us pursuant to the ATM facilities 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.

As of December 31, 2021, we had fully utilized the 2019 ATM Facility, and the 2020 ATM Facility and we had $78.3 million of common stock remaining and available to be sold under the 2021 ATM Facility.

From January 1, 2022 through February 15, 2022, we sold an additional 1,319,878 shares of common stock under the 2021 ATM Facility, at an average price of $15.88 per share, for gross proceeds of $21.0 million and net proceeds of $20.5 million, after deducting commissions and other offering expenses payable by us. As of February 15, 2022, we had $57.4 million of common stock remaining and available to be sold under the 2021 ATM Facility, subject to certain conditions as specified in the agreement.

Equity Incentive Plans

In March 2014, we adopted the 2014 Equity Incentive Plan ("2014 EIP"), which was amended and restated on October 15, 2014 upon the pricing of our initial public offering ("IPO").

The 2014 EIP 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 five percent of the number of shares of the Company's common stock outstanding as of such date or a lesser number of shares as determined by our board of directors.

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

Stock options are granted with exercise prices at no less than100% 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. The estimated fair value is generally equal to the closing market price of the Company's common stock on the measurement date. Options granted generally vest over four years and expire in seven to ten years. As of December 31, 2021, a total of16,086,987 shares of common stock were reserved for issuance under the 2014 EIP, of which4,018,597 shares were available for future grant and 12,068,390 shares were subject to outstanding options and RSUs, including performance-based awards.

In February 2018, we adopted the 2018 Inducement Plan ("Inducement Plan"), under which we may grant options, stock appreciation rights, RSAs and RSUs to new employees. In September 2020, we amended the Inducement Plan to reserve an additional 1,500,000 shares of the Company's common stock for issuance under the Inducement Plan, and in September 2021 we made a further amendment to reserve an additional 1,500,000 shares of the Company's common stock for issuance under the Inducement Plan. As of December 31, 2021, 4,022,184 shares of common stock were reserved for issuance under the Inducement Plan, of which1,278,379 shares were available for future grant and 2,743,805 shares were subject to outstanding options and RSUs.

Restricted Stock Units

The weighted average grant date fair value of RSUs granted during the years endedDecember 31, 2021, 2020 and 2019 was $16.42, $12.19 and $27.04, respectively. The estimated fair value of RSUs that vested in the years ended December 31, 2021, 2020 and 2019 was $27.1 million, $23.6 million and $13.8 million, respectively. As of December 31, 2021, there was $75.7 million of unrecognized stock-based compensation expense related to RSUs that is expected to be recognized over a weighted average period of 2.8 years. This excludes unrecognized stock-based compensation expense for performance-based RSUs that were deemed not probable of vesting in accordance with U.S. GAAP. The aggregate intrinsic value of the RSUs outstanding as of December 31, 2021 was $88.1 million.

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

	RSUs	
	Shares	Weighted Average Grant Date Fair Value
Balance as of December 31, 2020	3,829,620	$ 15.91
Granted	4,624,257	$ 16.42
Forfeited	(1,307,626)	$ 14.64
Vested	(1,553,893)	$ 17.41
Balance as of December 31, 2021	5,592,358	$ 16.22

Under our RSU settlement procedures, for some of the RSUs granted to our employees, we withhold shares at settlement to cover the estimated payroll withholding tax obligations. During 2021, we settled 1,553,893 shares underlying RSUs, of which 154,341 shares underlying RSUs were net settled by withholding 61,385 shares. The value of the shares underlying RSUs withheld was $1.2 million, based on the closing price of our common stock on the settlement date. During 2020, we settled 1,218,945 shares underlying RSUs, of which 276,822 shares underlying RSUs were net settled by withholding 106,459 shares. The value of the shares underlying RSUs withheld was $1.5 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 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)
Balance as of December 31, 2020	7,851,886	$ 22.89	6.4	$ 26,834
Granted	2,643,378	15.97		
Exercised	(246,867)	13.97		
Forfeited or expired	(1,028,560)	25.92		
Balance as of December 31, 2021	9,219,837	$ 20.81	6.4	$ 12,810
Vested and expected to vest as of December 31, 2021	9,219,837	$ 20.81	6.4	$ 12,810
Exercisable as of December 31, 2021	5,073,289	$ 24.36	4.8	$ 5,496

Aggregate intrinsic value represents the difference between the closing stock price of our common stock on December 31, 2021 and the exercise price of outstanding, in-the-money options. As of December 31, 2021, there was $41.9 million of unrecognized stock-based compensation expense related to stock options that is expected to be recognized over a weighted average period of 2.5 years.

Options for 246,867, 268,938 and 347,716 shares of our common stock were exercised during the years ended December 31, 2021, 2020 and 2019, with an intrinsic value of $0.8 million, $1.0 million and $3.8 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 during the periods indicated:

	Year ended December 31,		
	2021	2020	2019
Assumptions:			
Expected term (years)	6.0	6.0	5.9
Expected volatility	75.9%	76.8%	76.1%
Risk-free interest rate	0.9%	0.8%	2.1%
Expected dividend yield	0.0%	0.0%	0.0%
Fair Value:			
Weighted-average estimated grant date fair value per share	$ 10.52	$ 7.96	$ 18.06
Options granted	2,643,378	2,641,125	2,535,425
Total estimated grant date fair value	$ 27,808,000	$ 21,023,000	$ 45,790,000

The estimated fair value of stock options that vested in the years ended December 31, 2021, 2020 and 2019 was $26.6 million, $29.4 million and $31.6 million, respectively.

Employee Stock Purchase Plan

In May 2014, we adopted the 2014 Employee Stock Purchase Plan ("2014 ESPP"), which became effective on October 15, 2014 upon the pricing of our IPO. The 2014 ESPP permits eligible employees to purchase common stock at a discount through payroll deductions during defined offering periods. Eligible employees can purchase shares of the Company's common stock at 85% of the lower of the fair market value of the common stock 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 first offering under the 2014 ESPP commenced on June 1, 2016, and subsequent offerings commence on each anniversary of this date. The Company recorded $1.7 million, $1.8 million and $1.3 million of expense related to the 2014 ESPP in the years ended December 31, 2021, 2020 and 2019, respectively. A total of 319,190, 282,514 and 139,466 shares were purchased under the ESPP during the years ended December 31, 2021, 2020 and 2019, respectively.

As of December 31, 2021, there was $0.6 million of unrecognized stock-based compensation expense related to the ESPP that is expected to be recognized by the end of second quarter of 2022.

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 December 31, 2021, there were 1,817,511 shares authorized under the 2014 ESPP.

Reserved Shares

The following shares of common stock were reserved for future issuance under our equity incentive plans as of December 31, 2021:

	Total Shares Reserved
2014 Equity Incentive Plan	16,086,987
2018 Inducement Plan	4,022,184
2014 Employee Stock Purchase Plan	862,382
Total reserved shares of common stock	20,971,553

Stock-based Compensation Expense

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

	Year Ended December 31,		
	2021	2020	2019
	(in thousands)		
Research and development	$ 32,063	$ 31,527	$ 26,773
General and administrative	21,802	19,824	24,923
Total stock-based compensation expense	$ 53,865	$ 51,351	$ 51,696

11. Income Taxes

Losses before provision for income taxes were as follows in each period presented:

	Year Ended December 31,		
	2021	2020	2019
	(in thousands)		
United States	$ (340,301)	$ (306,758)	$ (291,049)
Foreign	206	153	85
Total loss before provision for income taxes	$ (340,095)	$ (306,605)	$ (290,964)

The components of provision for (benefit from) income taxes were as follows in each period presented:

	Year Ended December 31,		
	2021	2020	2019
	(in thousands)		
Current provision for (benefit from) income taxes:			
State	4	2	—
Foreign	42	13	12
Total current provision for (benefit from) income taxes	$ 46	$ 15	$ 12

A reconciliation of statutory tax rates to effective tax rates were as follows in each of the periods presented:

	Year Ended December 31,		
	2021	2020	2019
Federal income taxes at statutory rate	21.0%	21.0%	21.0%
Impact of stock compensation	(2.0%)	(2.4%)	0.1%
Non-deductible executive compensation	(0.2%)	(0.1%)	(0.7%)
Other	(0.1%)	0.3%	(0.2%)
Change in valuation allowance	(18.7%)	(18.8%)	(20.2%)
Effective tax rate	0.0%	0.0%	0.0%

Deferred tax assets and liabilities reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our deferred tax assets and liabilities were as follows for each of the dates presented:

	As of December 31,	
	2021	2020
	(in thousands)	
Deferred tax assets:		
Net operating losses	$ 308,997	$ 237,010
Stock-based compensation	24,181	20,672
Capitalized expenses	10,499	12,590
License fees	8,716	8,159
Operating lease liabilities	7,972	4,251
Legal fees	2,366	2,136
Tax credits	1,580	1,580
Deferred Revenue	12,133	—
Other	7,048	5,360
Total deferred tax assets	383,492	291,758
Valuation allowance	(376,071)	(287,349)
Total deferred tax assets	7,421	4,409
Deferred tax liabilities:		
Operating lease assets	(7,421)	(3,541)
Other	—	(868)
Total deferred tax liabilities	(7,421)	(4,409)
Net deferred tax assets (liabilities)	$ —	$ —

We recognize deferred income taxes for temporary differences between the basis of assets and liabilities for financial statement and income tax purposes, as well as for tax attribute carryforwards. We regularly evaluate the positive and negative evidence in determining the realizability of our deferred tax assets. Based upon the weight of available evidence, which includes our historical operating performance and reported cumulative net losses since inception, we maintained a full valuation allowance on the net deferred tax assets as of December 31, 2021 and 2020. We intend to maintain a full valuation allowance on our deferred tax assets until sufficient positive evidence exists to support reversal of the valuation allowance. The valuation allowance increased by $88.7 million for the year ended December 31, 2021 primarily due to federal and state NOLs and other U.S. deferred tax assets, which includes accelerated Bayer revenue recognition for tax purposes during 2021.

In response to the COVID-19 pandemic, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") was signed into law on March 27, 2020, providing companies with various tax relief provisions and other stimulus measures. Such measures include, but are not limited to, temporary changes regarding the prior and future utilization of net operating losses, technical corrections to prior tax legislation for tax depreciation of certain qualified improvement property, acceleration of AMT credit refunds, and changes to business interest limitations. The Consolidated Appropriations Act was also signed into law on December 27, 2020 to provide further relief measures and renew various expiring tax provisions. Additionally, the IRS issued final regulations and proposed regulations on calculating the limitation on business interest expense, the allowance for the first-year depreciation deduction under IRC Section 168(k), as amended by the Tax Cuts and Jobs Act (the "Tax Act"), for qualified property acquired and placed in service after September 27, 2017, and meals and entertainment deductions. Based on our evaluation, these regulations did not have a material impact on the income tax provision for the years ended December 31, 2021, 2020 and 2019.

Under the Tax Act, federal net operating losses generated in tax years beginning on or after January 1, 2018 and in future years may be carried forward indefinitely, but the utilization of such federal net operating losses is limited to 80% of current year taxable income. The CARES Act temporarily suspends this 80% taxable income limitation, allowing a net operating loss carryforward to fully offset taxable income in tax years beginning before January 1, 2021. It is uncertain if, and to what extent, various states will conform to the Tax Act or the CARES Act. The Tax Act nor the CARES Act had a material impact to our financial statements.

As of December 31, 2021, for federal income tax purposes, we had net operating loss carryforwards of approximately $1,064.4 million, of which $65.2 million begin to expire in 2032 and $999.2 do not expire, research & development tax credits of approximately $18.0 million which begin to expire in 2032, and orphan drug tax credits of approximately $94.5 million which begin to expire in 2035. For California income tax purposes, we had net operating loss carryforwards of approximately $1,045.5 million which begin to expire in 2032, and research & development tax credits of approximately $30.4 million which do not expire, and Competes tax credit of $2.0 million which begins to expire in 2024. For other states income tax purposes, we had net operating loss carryforwards of approximately $226.6 million which begins to expire in 2030.

Under Section 382 of the Internal Revenue Code of 1986, as amended, our ability to utilize net operating loss carryforwards or other tax attributes 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 specified testing period. Similar rules may apply under state tax laws.

We have performed a Section 382 analysis of transactions in our stock through December 31, 2021. We have experienced ownership changes since inception and our utilization of net operating loss carryforwards will be subject to annual limitations. However, it is not expected that the annual limitations will result in the expiration of tax attribute carryforwards prior to utilization.

The changes in the balance of gross unrecognized tax benefits, which excludes interest and penalties, for the years ended December 31, 2019, 2020 and 2021 are as follows:

	(In thousands)
Balance as of January 1, 2019	$ 41,074
Gross increases for tax positions related to current year	22,800
Gross increases for tax positions related to prior year	22,126
Gross decreases for tax positions related to prior year	—
Balance as of December 31, 2019	86,000
Gross increases for tax positions related to current year	24,648
Gross increases for tax positions related to prior year	—
Gross decreases for tax positions related to prior year	(47)
Balance as of December 31, 2020	110,601
Gross increases for tax positions related to current year	28,171
Gross increases for tax positions related to prior year	5,295
Gross decreases for tax positions related to prior year	—
Balance as of December 31, 2021	$ 144,067

The Company currently has a full valuation allowance against its U.S. net deferred tax assets, which would impact the timing of the effective tax rate benefit should any uncertain tax position be favorably settled in the future. For 2021, 2020, and 2019 total unrecognize benefits in the amount of $144.1 million, $110.6 million, and $86.0 million, respectively, no amount, if recognized, would affect the Company's effective tax rate.

The Company's policy is to account for interest and penalties related to uncertain tax positions as a component of the income tax provision. The Company has not accrued interest and penalties as of December 31, 2021 due to available tax losses.

Our significant jurisdictions are the U.S. federal jurisdiction and the California state jurisdiction. All of our tax years remain open to examination by the U.S. federal and California tax authorities. We also file in other state, local and foreign jurisdictions in which we operate, and such tax years remain open to examination.

The 2017 Tax Act imposed a mandatory transition tax on accumulated foreign earnings and generally eliminated U.S. taxes on foreign subsidiary distribution. As of December 31, 2021, the Company is not permanently reinvested with respect to its foreign earnings and has not recorded deferred income taxes and withholding taxes as these taxes are immaterial to the financial statements.

12. Subsequent Events

On January 26, 2022, the Company announced it has entered into an asset purchase agreement with FUJIFILM Diosynth Biotechnologies California, Inc. and, for certain limited purposes, FUJIFILM Holdings America Corporation, to sell all of the Company's right, title and interest in and to certain assets related to the Atara T-Cell Operations and Manufacturing facility located at 2430 Conejo Spectrum Street, Thousand Oaks, California for $100 million in cash, plus or minus certain closing adjustments pursuant to the asset purchase agreement. The closing of the proposed transaction is expected to occur in the quarter ending June 30, 2022, subject to certain closing conditions, including clearance of the transaction under the Hart-Scott-Rodino Antitrust Improvements Act of 1976.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. 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 December 31, 2021. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of December 31, 2021 to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely discussion regarding required disclosures. In designing and evaluating our disclosure controls and procedures, management recognizes that any disclosure controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Our management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2021 based on the criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on the results of its evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2021. The effectiveness of our internal control over financial reporting as of December 31, 2021 has been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in its report which is included in this Item 9A of this Annual Report on Form 10-K.

Inherent Limitations on Controls and Procedures

Our management, including the Chief Executive Officer and Chief Financial Officer, 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 December 31, 2021, 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 were no changes in our internal control over financial reporting during the three months ended December 31, which were identified in connection with our evaluation required by Rules 13a-15(d) and 15d-15(d) of the Exchange Act, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We have not experienced any material impact to our internal controls over financial reporting despite the fact that many of our employees are working remotely due to the COVID-19 pandemic. We are continually monitoring and assessing the COVID-19 situation to minimize the impact to the design and operating effectiveness of our internal controls.

Report of Independent Registered Public Accounting Firm

This Annual Report on Form 10-K includes an attestation report from our independent registered public accounting firm.

Report of Independent Registered Public Accounting Firm

To the stockholders and the Board of Directors of Atara Biotherapeutics, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Atara Biotherapeutics, Inc. and subsidiaries (the "Company") as of December 31, 2021, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control — Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheet and related consolidated statements of operations and comprehensive loss, stockholders' equity, and cash flows as of and for the year ended December 31, 2021, of the Company and our report dated February 28, 2022, expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying "Management's Report on Internal Control over Financial Reporting". Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ DELOITTE & TOUCHE LLP

San Francisco, California
February 28, 2022

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions That Prevent Inspections

Not Applicable.

PART III

Certain information required by Part III is omitted from this Annual Report on Form 10-K since we intend to file our definitive proxy statement for our 2022 annual meeting of stockholders (the Definitive Proxy Statement), pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended, not later than 120 days after December 31, 2021, and certain information to be included in the Definitive Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance

Information required by this Item is hereby incorporated by reference to our Definitive Proxy Statement.

Item 11. Executive Compensation

Information required by this Item is hereby incorporated by reference to our Definitive Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information required by this Item is hereby incorporated by reference to our Definitive Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information required by this Item is hereby incorporated by reference to our Definitive Proxy Statement.

Item 14. Principal Accountant Fees and Services

Information required by this Item is hereby incorporated by reference to our Definitive Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements.

The response to this portion of Item 15 is set forth under Item 8 above.

(a)(2) Financial Statement Schedules.

All schedules have been omitted because they are not required or because the required information is given in the financial statements or notes thereto set forth under Item 8 above.

(a)(3) Exhibits.

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation of Atara Biotherapeutics, Inc.	S-1	3.2	06/20/2014	
3.2	Amended and Restated Bylaws of Atara Biotherapeutics, Inc.	S-1	3.4	06/20/2014	
4.1	Form of Common Stock Certificate	S-1/A	4.1	07/10/2014	
4.2	Form of 2019 Pre-Funded Warrant	8-K	4.1	07/22/2019	
4.3	Form of May 2020 Pre-Funded Warrant	8-K	4.1	05/28/2020	
4.4	Form of December 2020 Pre-Funded Warrant	8-K	4.1	12/09/2020	
4.5	Description of Securities	10-K	4.4	02/27/2020	
10.1*	Amended and Restated 2014 Equity Incentive Plan	10-Q	10.2	08/08/2016	
10.2*	Forms of Option Agreement and Option Grant Notice under the 2014 Equity Incentive Plan	S-1	10.2	06/20/2014	
10.3*	Form of Restricted Stock Unit Agreement and Restricted Stock Unit Grant Notice under the 2014 Equity Incentive Plan	10-Q	10.1	11/07/2019	
10.4*	2014 Employee Stock Purchase Plan	S-1/A	10.8	07/10/2014	
10.5*	Second Amended and Restated 2018 Inducement Plan	S-8	4.3	09/29/2021	
10.6*	Form of Restricted Stock Unit Agreement and Restricted Stock Unit Grant Notice under the Inducement Plan	10-Q	10.2	11/07/2019	
10.7*	Form of Stock Option Agreement and Stock Option Grant Notice under the Inducement Plan	10-Q	10.3	05/08/2018	
10.8*	Forms of Inducement Grant Notice and Inducement Grant Agreement	10-Q	10.3	08/07/2017	
10.9*	Form of Indemnification Agreement made by and between Atara Biotherapeutics, Inc. and each of its directors and executive officers	S-1	10.9	06/20/2014	
10.10*	Form of Employment Agreement by and between Atara Biotherapeutics, Inc. and its executive officers.	10-Q	10.4	08/01/2018	
10.11*	Form of Executive Employment Agreement	10-Q	10.2	08/08/2019	
10.12*	Executive Employment Agreement, dated May 23, 2019, by and between Pascal Touchon and Atara Biotherapeutics, Inc.	8-K	10.1	05/28/2019	
10.13†	Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and Memorial Sloan Kettering Cancer Center, dated as of June 12, 2015	S-1	10.30	06/29/2015	
10.14†	Amendment No. 1 to the Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and Memorial Sloan Kettering Cancer Center, dated as of August 30, 2018	10-K	10.14	02/26/2019	
10.15†	Amended and Restated Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and the Council of the Queensland Institute of Medical Research, dated September 23, 2016, as amended	10-Q	10.1	08/01/2018	
10.16†	Amended and Restated Research and Development Collaboration Agreement, by and between Atara Biotherapeutics, Inc. and the Council of the Queensland Institute of Medical Research, dated September 23, 2016, as amended	10-Q	10.2	08/01/2018	

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Exhibit	Filing Date	
10.17+	Second Amended and Restated Research and Development Collaboration Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 28, 2019	10-Q	10.3	11/07/2019	
10.18+	Second Amended and Restated Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 28, 2019	10-Q	10.4	11/07/2019	
10.19+	Third Amended and Restated Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 26, 2020	10-Q	10.1	11/09/2020	
10.20+	Third Amended and Restated Exclusive License Agreement, by and between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated August 26, 2020	10-Q	10.2	11/09/2020	
10.21†	Development and Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated August 10, 2015, as amended	10-Q	10.3	08/01/2018	
10.22+	Amended and Restated Amendment No. 2 to the Development and Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated November 4, 2018	10-Q	10.5	11/07/2019	
10.23+	Amendment No. 3 to the Development and Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated June 28, 2019	10-Q	10.6	11/07/2019	
10.24+	Amendment No. 4 to the Development and Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated November 4, 2019	10-K	10.22	02/27/2020	
10.25+	Amendment No. 5 to the Development and Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated November 27, 2019	10-K	10.23	02/27/2020	
10.26+	Commercial Manufacturing Services Agreement, by and between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated January 1, 2020	10-K	10.24	02/27/2020	
10.27+	Amendment No. 1 to Commercial Manufacturing Services Agreement, between Atara Biotherapeutics, Inc. and Cognate BioServices, Inc., dated September 1, 2021	10-Q	10.1	11/04/2021	
10.28	Office Lease, by and between BXP 611 Gateway Center LP and Atara Biotherapeutics, Inc., dated as of December 9, 2015	10-K	10.29	03/04/2016	
10.29	First Amendment to Lease, by and between BXP 611 Gateway Center LP and Atara Biotherapeutics, Inc., dated October 21, 2020	10-Q	10.4	11/09/2020	
10.30	Standard Industrial Lease by and between Thousand Oaks Industrial Portfolio, LLC and Atara Biotherapeutics, Inc. dated February 6, 2017	10-Q	10.1	05/04/2017	
10.31+	Research, Development and License Agreement, by and between Atara Biotherapeutics, Inc. and Bayer AG, dated December 4, 2020	10-Q	10.1	05/04/2021	
10.32	Lease Agreement between LA Region No. 2, LLC and Atara Biotherapeutics, Inc. dated March 17, 2021	10-Q	10.2	05/04/2021	
10.33+	First Amended and Restated Exclusive License Agreement by and between Atara Biotherapeutics, Inc. and Memorial Sloan Kettering Cancer Center, dated March 22, 2021	10-Q	10.3	05/04/2021	
10.34+	Deed of Amendment Number 1 to Third Amended and Restated License Agreement dated April 21, 2021	10-Q	10.1	08/09/2021	

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Exhibit	Filing Date	
10.35+	Commercialization Agreement by and between Atara Biotherapeutics, Inc. and Pierre Fabre Medicament, dated October 2, 2021				X
10.36	Second Amendment to Lease, by and between Atara Biotherapeutics, Inc. and 611 Gateway Center LP, LLC, dated December 9, 2021				X
10.37+	Fourth Amended and Restated Research and Development Collaboration Agreement between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated December 17, 2021				X
10.38+	Fourth Amended and Restated Exclusive License Agreement between Atara Biotherapeutics, Inc. and the Counsel of the Queensland Institute of Medical Research, dated December 17, 2021				X
10.39*	Form of Atara Biotherapeutics, Inc. Executive Employment Agreement				X
21.1	List of Subsidiaries				X
23.1	Consent of Independent Registered Public Accounting Firm				X
24.1	Power of Attorney (included on signature page)				
31.1	Certification of the Chief Executive Officer pursuant to Rules 13A-14A and 15D-14A of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				X
31.2	Certification of the Chief Financial Officer pursuant to Rules 13A-14A and 15D-14A of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				X
32.1(1)	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				X
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document				X
101.SCH	Inline XBRL Taxonomy Extension Schema Document				X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document				X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document				X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document				X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				X
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)				X

† Confidential treatment has been granted for a portion of this exhibit.

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

* Indicates management contract or compensatory plan or arrangement.

(1) The certifications attached as Exhibit 32.1 accompany this Annual Report on Form 10-K 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.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of South San Francisco, State of California, on the 28th day of February, 2022.

Atara Biotherapeutics, Inc.

By: /s/ Pascal Touchon
Pascal Touchon
President and Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Pascal Touchon and Utpal Koppikar, and each of them, as his or her true and lawful attorneys-in-fact and agents, each with the full power of substitution, for him or her and in his or her name, place or stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or their, his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Pascal Touchon Pascal Touchon	President, Chief Executive Officer and Director (*principal executive officer*)	February 28, 2022
/s/ Utpal Koppikar Utpal Koppikar	Chief Financial Officer (*principal financial and accounting officer*)	February 28, 2022
/s/ Ronald Renaud Ronald Renaud	Director, Chairman	February 28, 2022
/s/ Roy Baynes Roy Baynes, M.D., Ph.D.	Director	February 28, 2022
/s/ Eric L. Dobmeier Eric L. Dobmeier	Director	February 28, 2022
/s/ Matthew K. Fust Matthew K. Fust	Director	February 28, 2022
/s/ Carol G. Gallagher Carol G. Gallagher, Pharm.D.	Director	February 28, 2022
/s/ William K. Heiden William K. Heiden	Director	February 28, 2022
/s/ Ameet Mallik Ameet Mallik	Director	February 28, 2022
/s/ Maria Grazia Roncarolo Maria Grazia Roncarolo, M.D.	Director	February 28, 2022
/s/ Beth Seidenberg Beth Seidenberg, M.D.	Director	February 28, 2022

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

Between:

Atara Biotherapeutics, Inc.

And:

Pierre Fabre Medicament

COMMERCIALIZATION AGREEMENT

Dated October 2, 2021

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COMMERCIALIZATION AGREEMENT

This Commercialization Agreement (this "**Agreement**") is made as of October 2, 2021 (the "**Effective Date**"), by and between Atara Biotherapeutics, Inc., incorporated under the laws of Delaware and having its registered office at 611 Gateway Blvd., Suite 900, South San Francisco, CA 94080 ("**Atara**"), and Pierre Fabre Medicament, having its registered office at 45, place Abel Gance, 92100 Boulogne Billancourt, France ("**Partner**"). Atara and Partner are referred to in this Agreement individually as a "**Party**" and collectively as the "**Parties**."

Recitals

WHEREAS, Atara is engaged in the development and manufacture of T-cell immunotherapies;

WHEREAS, Atara is conducting pivotal clinical studies with the Product (as defined below);

WHEREAS, Partner has expertise in commercializing biological and pharmaceutical products for the treatment of oncologic diseases in the Territory (as defined herein); and

WHEREAS, Atara desires to enter into a relationship with Partner wherein Partner will Commercialize the Product in the Field (each, as defined herein) in the Territory pursuant to the terms and conditions of this Agreement and certain Ancillary Agreements (as defined herein) and Partner agrees to do so.

NOW, THEREFORE, in consideration of the foregoing premises and the mutual covenants herein contained, the receipt and sufficiency of which are hereby acknowledged, Atara and Partner hereby agree as follows:

Article 1

Definitions

The terms in this Agreement with initial letters capitalized shall have the meanings set forth below, or the meaning as designated in the indicated places throughout this Agreement.

1.1 "**Accounting Standards**" shall mean, with respect to Atara, GAAP, and with respect to Partner, IFRS.

1.2 "**Additional Indication**" means an indication in the Field other than the Primary Indication, including, but not limited to, a Multi-Cohort Indication.

1.3 "**Adverse Event**," "**Serious Adverse Event**" and "**Serious Adverse Drug Reaction**" shall have the meanings provided to such terms in the ICH guideline for industry on Clinical Safety Data Management (E2A, Definitions and Standards for Expedited Reporting).

1.4 "**Affiliate**" means, with respect to a Party, any Entity that controls, is controlled by, or is under common control with that Party. For the purpose of this definition, "control" means

direct or indirect ownership of fifty percent (50%) or more of the shares of stock entitled to vote for the election of directors, in the case of a corporation, or fifty percent (50%) or more of the equity interest in the case of any other type of legal entity, status as a general partner in any partnership, or any other arrangement whereby the Entity controls or has the right to control the board of directors or equivalent governing body of a corporation or other entity, or the ability to cause the direction of the management or policies of a corporation or other entity.

1.5 "**Alliance Manager**" has the meaning given in Section 4.6.

1.6 "**Ancillary Agreements**" means, collectively, the Manufacturing and Supply Agreement, the Pharmacovigilance Agreement, and the Quality Agreement.

1.7 "**Anti-Corruption Laws**" means the United States Foreign Corrupt Practices Act, the United Kingdom Bribery Act, and any other Laws of a similar nature for the prevention of fraud, corruption, racketeering, money laundering and terrorism, in each case as they may be amended from time to time.

1.8 "**Approved Sublicensee**" has the meaning given in Section 2.2(a).

1.9 "**Atara 205 Study**" means the multicenter, multicohort, open-label, single-arm, Phase 2 Clinical Study having the ClinicalTrials.gov identifier NCT04554914, as designed as of the Effective Date.

1.10 "**Atara 302 Study**" means the multicenter, open-label, Phase 3 Clinical Study having the ClinicalTrials.gov identifier NCT03394365, as designed as of the Effective Date.

1.11 "**Atara 902 EAP Observational Study**" means the ongoing Observational Study describing the analysis of data collected as part of the Atara EU EAP/SPU Program, as designed as of the Effective Date

1.12 "**Atara CMO**" has the meaning given in Section 9.5(a).

1.13 "**Atara EU EAP/SPU Program**" means Atara's ongoing Early Access Program that provides Product for named-patient use in the Territory as designed as of the Effective Date.

1.14 "**Atara Manufacturing Facility**" means one or more facilities of (a) [***], or (h) any other facility of an Atara Affiliate or Third Party subcontractor designated after the Effective Date by Atara, in each case (i) subject to prior notice to Partner sufficiently in advance if the use of any such Atara Manufacturing Facility will require a change to any Regulatory Filing, Regulatory Approval, or Marketing Authorization for the Product in the Territory, and (ii) subject to Partner's prior written consent in the event that Atara's use of such other facility in connection with the performance of its obligations under this Agreement would adversely impact in any material respect a Regulatory Filing, Regulatory Approval, or Marketing Authorization, in each case, in the Territory, which consent shall not be unreasonably withheld or delayed, or in accordance with Section 9.5.

1.15 "**Atara Indemnified Person**" has the meaning given in Section 13.2.

1.16 "**Atara Intellectual Property**" means (a) Atara Patent Rights, and (b) Know-How, Product Trademarks, and applicable web domain name registrations (as they may be determined), that are (i) Controlled by Atara as of the Effective Date or during the Term, and (ii) necessary or reasonably useful to Develop, seek Regulatory Approvals, and Commercialize a Product in the Field in the Territory, perform qualified person release, and secondary Packaging and Labeling of the Product for use and Commercialization in the Territory; as well as Cell Selection and Manufacturing if and when these activities are transferred to Partner pursuant to this Agreement. [***]. For the avoidance of doubt, Atara Intellectual Property shall include all Development Data.

1.17 "**Atara Officers**" means the officers listed in Exhibit I.

1.18 "**Atara Patent Rights**" means (a) the Patent Rights listed on Exhibit D and/or (b) any Patent Rights Controlled by Atara as of the Effective Date or during the term of the Agreement that, but for the licenses granted under this Agreement, would be infringed by the Development of, seeking Regulatory Approval for, performing quality control testing, qualified person release of, secondary Packaging or Labeling of, or Commercializing of the Product in the Field in the Territory, as well as Cell Selection and Manufacturing if and when these activities are transferred to Partner pursuant to this Agreement; and (c) all additions, divisions, continuations, substitutions, re-issues, re-examinations, registrations, patent term extensions, supplemental protection certificates, and renewals of any of the foregoing Patent Rights covered in subsections (a) and (b).

1.19 "**Atara's knowledge**" means the knowledge of the Atara Officers after having conducted reasonable internal inquiries on matters that a reasonably prudent person in a comparable position to each of such Atara Officers would be aware of having made reasonable inquiries.

1.20 "**Business Day**" means any day that is not a Saturday, a Sunday or other day on which banks are required or authorized by law to be closed in the State of New York, United States or Paris, France.

1.21 "**Calendar Quarter**" means each three (3) month period commencing January 1, April 1, July 1 or October 1 of any year; provided, however, that (a) the first Calendar Quarter of the Term shall extend from the Effective Date to the end of the first full Calendar Quarter thereafter, and (b) the last Calendar Quarter of the Term shall end upon the expiration or termination of this Agreement.

1.22 "**Calendar Year** " means the period beginning on the 1st of January and ending on the 31st of December of the same year; provided, however, that (a) the first Calendar Year of the Term shall commence on the Effective Date and end on December 31 of the same year and (b) the last Calendar Year of the Term shall commence on January 1 of the Calendar Year in which this Agreement terminates or expires and end on the date of termination or expiration of this Agreement.

1.23 "**Cell Selection**" means the process of [***], as such process may (i) be amended or modified by Atara from time to time, provided that any such amendment or modification may not be implemented with respect to Commercialization of the Product in the Territory without

reasonable prior notice to Partner if such change will require a change to any Regulatory Filing, Regulatory Approval, or Marketing Authorization for the Product in the Territory and without Partner's prior written consent if it would be reasonably expected to materially and adversely impact a MA or MAA or the Commercialization of the Product by Partner, and (ii) be transitioned once to any of Partner, its Affiliates, or a single Approved Sublicensee pursuant to Section 8.10, wherein transition to an Approved Sublicensee requires the prior written consent of Atara, which consent shall not be unreasonably withheld, conditioned or delayed. Upon such transfer, Cell Selection may not be further transferred by such Partner, Affiliate or Approved Sublicensee without the further prior written consent of Atara, which, in the event that Parties mutually agree that the single party to whom Atara transitioned responsibility for Cell Selection activities is no longer able to satisfactorily perform such activities, shall not be unreasonably withheld or delayed.

1.24 "**Cell Therapy Restricted Product**" has the meaning given in Section 8.14.

1.25 "**Change of Control**" means (a) a merger or consolidation of a Party with a Third Party that results in the voting securities of a Party outstanding immediately prior thereto, or any securities into which such voting securities have been converted or exchanged, ceasing to represent at least fifty percent (50%) of the combined voting power of the surviving entity or the parent of the surviving entity immediately after such merger or consolidation, (b) a transaction or series of related transactions in which a Third Party, together with its Affiliates, becomes the direct or indirect beneficial owner of fifty percent (50%) or more of the combined voting power of the outstanding securities of a Party, or (c) the sale or other transfer to a Third Party of all or substantially all of a Party's and its Affiliates' assets.

1.26 "**Claim**" means a Third Party demand, claim, action, proceeding, order, finding or verdict (whether criminal or civil, in contract, tort or otherwise) seeking or awarding losses, damages, legal costs, other expenses of any nature, or equitable remedies of any nature, including restitution and injunctive relief.

1.27 "**Clinical Study**" means any interventional human clinical study of the Product and specifically excludes any Observational Study.

1.28 "**CMC**" means chemistry, manufacturing and controls.

1.29 "**Combination Product**" means a product comprising the Product plus one or more Other Component(s).

1.30 "**Commercialize**" and "**Commercialization**" are used interchangeably to mean any and all activities directed to the use, sale, offer for sale and import of the Product, and inclusive of Pre-Launch, launch, promotion, marketing, pricing, reimbursement, sale, and distribution of the Product, including: (a) strategic marketing, sales force detailing, advertising, and market and Product support; (b) all customer support, Product distribution, invoicing and sales activities, (c) market access activities (pricing, Pricing Approval, and reimbursement) and (d) medical activities with respect to the Product in the Territory in support of the sales, promotion, marketing or use of the Product in the Territory. For the avoidance of doubt, "Commercialize" and "Commercialization" shall include any activities directed or relating to Early Access Programs, and Observational Studies (other than the Atara 902 EAP Observational Study and the Atara EU

EAP/SPU Program), and exclude any activities directed or relating to Development, Cell Selection or Manufacturing.

1.31 "**Commercially Reasonable Efforts**" means, with respect to particular obligations or tasks, such level of efforts and resources applied to carry out such obligations or tasks in a sustained manner consistent with the efforts and resources commonly used in the biopharmaceutical industry by a company of comparable size in connection with the development, manufacture or commercialization of products, as the case may be, to accomplish such obligations or tasks, at the same stage of development or commercialization, as applicable, for internally developed healthcare products in a similar area with similar market potential, at a similar stage of their product life taking into account, [***].

1.32 "**Commercialization Plan**" means the written plan directed to Commercialization of the Product in the Field in the Territory prepared, reviewed, discussed, updated and amended from time to time in accordance with Section 8.3.

1.33 "**Commercial Sale**" means an invoiceable sale by Partner, its Affiliate, or Approved Sublicensee to a Third Party, excluding any sales under an Early Access Program.

1.34 "**Confidential Information**" means all proprietary Know-How, unpublished patent applications and other information and data of a financial, commercial, business, operational or technical nature that: (a) the Disclosing Party or any of its Affiliates has supplied or otherwise made available to the other Party or any of its Affiliates in connection with this Agreement, whether prior to or during the Term and whether made available orally, by observation, in writing or in electronic form; or (b) the Receiving Party has learned from the disclosing Party in the course of this Agreement, in each case including information comprising or relating to concepts, discoveries, inventions, data, designs or formulae in relation to this Agreement.

1.35 "**Control**" or "**Controlled**" means with respect to any material, Know-How or other information or intellectual property right, the possession (whether by license, other than solely by virtue of licenses granted in this Agreement, or ownership) by a Party or its Affiliates of the ability to grant to the other Party access, a license, or a sub-license or other right thereunder without breaching or violating the terms of any applicable agreement or other arrangement with a Third Party.

1.36 "**Cost-Plus**" means the actual cost incurred by Atara for Manufacturing Product, plus [***], where actual costs include, without limitation, raw materials, intermediates, direct labor, and direct and indirect allocation of facilities and other overhead costs as further detailed in Exhibit C and the Manufacturing and Supply Agreement.

1.37 "**CTA**" shall mean a clinical trial application (including any amendments thereto) as provided for in European Community Directive 2001/20/EC and/or European Union Regulation 536/2014 and the regulations promulgated thereunder, as applicable, filed with a Regulatory Authority in the European Union before the commencement of Clinical Studies for a Product, or any comparable filing with any Regulatory Authority in any other jurisdiction within or outside the Territory (including any Investigational New Drug Application filed with a Regulatory Authority in the United States pursuant to 21 C.F.R. §312).

1.38 "**Cover**" means with respect to any Patent Right and activity, that such Patent Right would be infringed by such activity in the absence of the licenses granted pursuant to this Agreement.

1.39 "**Current Studies** " means the Atara 205 Study, the Atara 302 Study, the Atara 902 EAP Observational Study, and the Atara EU EAP/SPU Program.

1.40 "**Data Protection Laws**" means all applicable Laws, including the Health Insurance Portability and Accountability Act, the California Consumer Privacy Act of 2018, and the General Data Protection Regulation 2016/679, and any national other legislation relating to privacy and data protection, direct marketing or the interception or communication of electronic messages, in each case as amended, consolidated, re-enacted or replaced from time to time.

1.41 "**Data Subject**" means a natural person who is an identified or identifiable natural person. An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

1.42 "**Develop**" or "**Development**" means any and all activities related to research, non-clinical, pre-clinical and Clinical Studies with respect to the Product, including, without limitation, supporting any Investigator Sponsored Clinical Trials, but excluding Manufacturing of the Product for the purpose of conducting the foregoing activities.

1.43 "**Development Data**" shall have the meaning given in Section 6.6. Development Data includes, but is not limited to, Regulatory Data.

1.44 "**Dispute**" shall have the meaning given in Section 17.10(a).

1.45 "**Distributor**" shall have the meaning given in Section 2.2(b).

1.46 "**DMF**" means a drug master file and all equivalents in any country or jurisdiction for the Product, and any components of such Product, submitted by a Party, its Affiliates and/or a sublicensee, to Regulatory Authorities.

1.47 "**Dollar**" or "**$**" means the legal tender of the United States.

1.48 "**Early Access Approvals**" means the permissions, exemptions, approvals, authorizations and/or waivers required by Regulatory Authorities for medical treatments pursuant to an Early Access Program, where the use of such Product is not intended to obtain information about the safety or effectiveness of the Product.

1.49 "**Early Access Program**" or "**EAP**" means the activities directed to (a) supporting a physician's request(s) for the Product for named-patient use, compassionate use, expanded access and hospital exemption in the Territory through an Early Access Approval (b) the securing of Early Access Approvals for Product, for the use of such treatments, and (c) the labeling, packaging, distribution and sale (as appropriate) of such treatments pursuant to such Early Access Approvals.

1.50 "**EBV Restricted Product**" has the meaning given in Section 8.14.

1.51 "**EC**" means the European Commission, or any successor entity thereto performing similar functions.

1.52 "**EMA**" means the European Medicines Agency, or any successor entity thereto performing similar functions.

1.53 "**Entity**" means a partnership, limited partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated association, joint venture or similar entity or organization.

1.54 "**Epstein Barr Virus**" or "**EBV**" means human herpesvirus 4.

1.55 "**EBV+PTLD**" means EBV-positive post-transplant lymphoproliferative disease.

1.56 "**Europe**" means (a) the twenty-seven (27) countries of the European Union as constituted on the Effective Date, and (b) Iceland, Liechtenstein, and Norway.

1.57 "**European Territory**" means Europe and the United Kingdom (UK).

1.58 "**Executive Officers**" has the meaning given in Section 4.8(b), hereto.

1.59 "**Existing Agreement**" means Atara's exclusive license agreement with MSK as Amended and Restated on March 22, 2021, as it may be further amended from time to time and subject to the terms and conditions of this Agreement.

1.60 "**Extended Royalty Term**" has the meaning given in Section 11.4(b), hereto.

1.61 "**Field**" means all human therapeutic uses for any EBV-positive disease, except multiple sclerosis and other autoimmune conditions.

1.62 "**First Commercial Sale**" means, with respect to any country in the Territory the first Commercial Sale in the Field by or on behalf of Partner, its Affiliate or its Approved Sublicensee to a Third Party (including to a Distributor) in such country. Notwithstanding the foregoing, any *bona fide* invoiced sales of Product for a commercial margin in a country in the Territory by Partner, its Affiliate or its Approved Sublicensee following receipt of Regulatory Approval, but prior to obtaining Pricing Approval (e.g., sales of Product at a commercial margin under the Temporary Authorization for Use Program in France), shall be deemed a "First Commercial Sale" of the Product in such country.

1.63 "**Full Royalty Term**" means, on a country-by-country-basis within the Territory, the period beginning on the date of the First Commercial Sale of Product in such country and ending on the last to occur of (a) [***] after the First Commercial Sale in the applicable country; (b) the expiration or abandonment of the last Valid Claim of the Patent Rights within the Atara Intellectual Property that Covers any aspect of the Commercialization of the Product in the Field in such country; or (c) the expiration of all Regulatory Exclusivity for such Product in the Field in such country.

1.64 "**GAAP**" means the generally accepted accounting principles in the United States as generally and consistently applied by Atara.

1.65 "**Generic Competitor**" means, with respect to a Product, on a country-by-country basis within the Territory, one or more pharmaceutical product(s) (a) sold under a Marketing Authorization granted by an applicable Regulatory Authority to a Third Party (who is not an Affiliate of Partner or an Approved Sublicensee or a Distributor), (b) that contains the same or biologically similar active ingredient as the Product (whether or not in the same formulation or a similar formulation as the Product), and (c) is approved in reliance of a prior Marketing Authorization of the Product granted by the applicable Regulatory Authority, including for the avoidance of doubt, the Marketing Authorization transferred by Atara to Partner under this Agreement..

1.66 "**Generic Market Share**" means, with respect to a Product in a country, the total unit volume of Generic Competitor(s) of such Product sold in such country, as a percentage of the combined unit volume of such Product and such Generic Competitor(s), in the aggregate in such country, for the current Calendar Quarter (i.e., the Calendar Quarter for which royalties are being calculated under Section 11.4) and the preceding Calendar Quarter. Such unit volumes shall be determined by the number of unit sales given for such Product and such Generic Competitor(s) in aggregate, during such period (as evidenced by data from IMS Health or other data service reasonably acceptable to both Parties).

1.67 "**Global Safety Database**" means the database containing worldwide safety data including Adverse Events, Serious Adverse Events, adverse reactions, Serious Adverse Drug Reactions, safety reports related to special situations for the Product as defined in the applicable Laws, and pregnancy reports for the Product.

1.68 "**Global Branding Strategy**" has the meaning given in Section 8.9, hereto.

1.69 "**Good Clinical Practices**" or "**GCP**" means all applicable current good clinical practices, including, as applicable, (a) the standards detailed in the ICH Harmonized Tripartite Guideline for Good Clinical Practice and (b) similar standards, guidelines and regulations promulgated or otherwise required by other applicable Regulatory Authorities, in each case, as they may be amended from time to time.

1.70 "**Good Laboratory Practices**" or "**GLP**" means all applicable current good laboratory practices, including, as applicable, (a) the standards detailed in Directive 2004/10/EC and (b) similar standards, guidelines and regulations promulgated or otherwise required by other applicable Regulatory Authorities, in each case, as they may be amended from time to time.

1.71 "**Good Manufacturing Practices**" or "**GMP**" means all applicable current good manufacturing practices including, as applicable, (a) the principles detailed in the U.S. Current Good Manufacturing Practices, 21 C.F.R. Articles 210, 211, 601 and 610, (b) the principles detailed in the ICH Q7 guidelines, and (c) the equivalent applicable Law in any relevant country, each as may be amended and applicable from time to time.

1.72 "**Government Authority**" means any federal, state, national, regional, provincial or local government, or political subdivision thereof, or any multinational organization or any

authority, agency or commission entitled to exercise any administrative, executive, judicial, legislative, police, regulatory or taxing authority or power, any court or tribunal (or any department, bureau or division thereof, or any governmental arbitrator or arbitral body).

1.73 "**HLA**" means human leukocyte antigen.

1.74 "**ICH**" means International Conference on Harmonization.

1.75 "**IFRS**" means the International Financial Reporting Standards generally and consistently applied by Partner.

1.76 "**Investigator Sponsored Clinical Trial**" shall mean a clinical study of a Product that is sponsored and conducted by a physician, physician group or other Third Party not acting on behalf of a Party or an Affiliate, pursuant to a CTA held by such Third Party, and with respect to which a Party or its Affiliate, provides funding or other support for such clinical study.

1.77 "**Indemnitee**" has the meaning given in Section 13.3, hereto.

1.78 "**Indemnitor**" has the meaning given in Section 13.3, hereto.

1.79 "**Insolvency Event**" means, in relation to either Party, any one of the following: (a) that Party is declared insolvent or bankrupt by a court of competent jurisdiction; (b) that Party is the subject of voluntary or involuntary bankruptcy proceedings instituted on behalf of or against such Party (except for involuntary bankruptcy proceedings which are dismissed within sixty (60) days); (c) an administrative receiver, receiver and manager, interim receiver, custodian, sequestrator or similar officer is appointed in respect of that Party by a court of competent jurisdiction; (d) a notice shall have been issued by a competent authority to convene a meeting for the purpose of passing a resolution to wind up that Party, or such a resolution shall have been passed other than a resolution for the solvent reconstruction or reorganization of that Party; and with respect to Atara only, (e) a resolution shall have been passed by that Party or that Party's directors to make an application for an administration order or to appoint an administrator; or (f) that Party proposes or makes any general assignment, composition or arrangement with or for the benefit of all or some of that Party's creditors or makes or suspends or threatens to suspend making payments to all or some of that Party's creditors

1.80 "**Joint Steering Committee**" or "**JSC**" has the meaning given in Section 4.1.

1.81 "**Know-How**" means any and all tangible and intangible information and materials, including research and Development Data, regulatory submissions and correspondence, manufacturing information and processes, formulations, assays, cell lines, sequences, composition of matter, constructs, discoveries, improvements, modifications, processes, methods, protocols, formulas, utility, data (including physical, chemical, biological, toxicological, pharmacological, preclinical, and clinical data), results, inventions, know-how and trade secrets, patentable or otherwise, and all other scientific, marketing, financial and commercial information or data, but excluding any of the foregoing to the extent described or claimed in any Patent Rights.

1.82 "**Label**" or **Labeling**" refers to such labels and other written, printed or graphic matter, (a) upon any container or wrapper utilized with the Product, or (b) accompanying the Product, including, without limitation, Package inserts and patient-specific information sheet.

1.83 "**Law**" means any federal, state, local, foreign or multinational law, statute, standard, ordinance, code, rule, regulation, resolution or promulgation, or any order by any Government Authority (including, without limitation, any Regulatory Authority), or any license, franchise, permit or similar right granted under any of the foregoing, or any similar provision having the force or effect of law, including, without limitation, applicable Anti-Corruption Laws and GMP, GLP, and GCP standards.

1.84 "**Liens**" has the meaning set forth in Section 12.5(a).

1.85 "**Limited Period**" has the meaning set forth in Section 8.14.

1.86 "**Major Markets**" means [***].

1.87 "**Manufacture**" or "**Manufacturing**" are used interchangeably herein to mean the operations required, as applicable, to (a) manufacture test, store, and ship Product for Development and for use pursuant to any Early Access Program in the Territory, or (b) manufacture, test, store and ship the Product to Partner, or Partner's Affiliate for (i) Commercialization in the Territory, and (ii) Development and for use pursuant to any Early Access Program in the Territory, including primary Packaging, Labeling, and quality control testing (including in the European Territory), but excluding qualified person release and secondary Packaging and Labeling. For the avoidance of doubt, all secondary Packaging and Labeling (including accompanying patient-specific information sheet) of the Product for distribution and use in the Territory will be the sole responsibility and expense of Partner.

1.88 "**Manufacturing and Supply Agreement**" or "**MSA**" has the meaning given in Section 9.1, hereto.

1.89 "**Marketing Authorization**" or "**MA**" means an approval by a Regulatory Authority for the placing in the market of therapeutic products in a country, region or other jurisdiction in the Territory, including, without limitation, a marketing authorization as granted by the EC and all amendments and supplements thereto. For the avoidance of doubt, Marketing Authorization does not include Pricing Approvals in any country, region, or jurisdiction in the Territory.

1.90 "**Marketing Authorization Application**" or "**MAA**" means an application for Marketing Authorization and all amendments and supplements thereto prior to its approval, including all necessary documents, data and other information, including, without limitation any application for Marketing Authorization filed with the EMA.

1.91 "**MHRA**" means the Medicines and Healthcare Products Regulatory Agency, or any successor entity thereto performing similar functions.

1.92 "**MSK**" means the Memorial Sloan Kettering Cancer Center.

1.93 "**Multi-Cohort Indications**" means any or all indications selected from EBV+ acquired immunodeficiency lymphoproliferative diseases (AID-LPD), EBV+ primary immunodeficiency lymphoproliferative disease (PID-LPD), EBV+ sarcoma, including leiomyosarcomas (LMS), chronic active EBV infection (CAEBV), EBV-associated hemophagocytic lymphohistiocytosis (HLH), EBV+ PTLD ineligible for current first line standard of care (rituximab ± chemotherapy) treatment, and EBV+ PTLD with central nervous system involvement.

1.94 "**New Development**" has the meaning given in Section 6.2(b), hereto.

1.95 "**Net Sales**" means the gross amount billed or invoiced on sales of the Product sold by Partner, its Affiliates or their Approved Sublicensees (including sales of Product by Partner, its Affiliates or their Approved Sublicensees to Distributors, but not by Distributors) to a Third Party in the Territory (other than sales among Partner, its Affiliates and Approved Sublicensees for subsequent resale in which case the first sale to a Third Party that is not an Affiliate or an Approved Sublicensee shall be used for calculation of Net Sales), less the following: [***].

Gross sales of Product shall be deemed to have been made on the date on which they are recognized in Partner's financial accounts, in accordance with their standard accounting procedures. For clarity, Net Sales shall include [***].

Net Sales shall be determined in accordance with Accounting Standards.

In the event that a Product is sold in the form of a Combination Product, then, for the purpose of calculating royalties due, Net Sales will be adjusted by multiplying by the fraction A/(A+B) where A is the gross per unit invoice price of the Product, if sold separately, and B is the gross per unit invoice price of any Other Component(s), if sold separately.

If, on a country-by-country basis, the Other Component(s) are not sold separately in that country, Net Sales will be adjusted by multiplying by the fraction A/C where A is the gross per unit invoice price of the Product, if sold separately, and C is the gross per unit invoice price of the Combination Product. In each case, the gross per unit invoice price shall be those applicable during the relevant Quarter or, if sales of both the Product and the Other Component did not occur in such Quarter, then in the most recent Quarter in which sales of both occurred. If, on a country-by-country basis, neither the Product nor the Other Component are sold separately in such country, then the fraction by which the Net Sales value shall be multiplied shall be determined between the Parties in good faith.

1.96 "**Nordic Countries**" means Denmark, Finland, Norway and Sweden.

1.97 "**Observational Study**" means any non-interventional study for the Product. Observational Studies may include patient registries, surveillance studies, health economic studies or similar activities.

1.98 "**Option Notice**" shall have the meaning given in Section 3.1.

1.99 "**Option Territory**" means [***].

1.100 "**Orphan Drug Designation**" means orphan designation (EU/3/16/1627) granted by the EC for the Product in relation to the Primary Indication and any other orphan designation (i) granted by the EC for the Product with respect to an Additional Indication(s) or (ii) granted by any Regulatory Authority within a country or regulatory region within the Territory with respect to the Product.

1.101 "**Other Component**" means a product, component, or medical device, in each case, either as part of, or companion to, the Product, or co-packaged, or co-distributed with the Product.

1.102 "**Package**," "**Packaged**" or "**Packaging**" means all primary and/or secondary containers, including cartons, shipping cases, printed materials, or any other like matter used in packaging or accompanying a Product for Commercial Sale.

1.103 "**Partner Indemnified Person**" has the meaning given in Section 13.1.

1.104 "**Partner Intellectual Property**" has the meaning given in Section 6.6.

1.105 "**Partner Notice**" shall have the meaning given in Section 3.2.

1.106 "**Patent Rights**" means any and all issued patents and patent applications existing upon the Effective Date and in the future, including, without limitation, provisional applications, continuation applications, substitutions, continuations-in-part, divisional applications, renewals, Patent Cooperation Treaty applications, and all letters patent granted thereon, invention patents, utility model patents, industrial design patents, all patents-of-addition, reexaminations, reissues, registrations, confirmations, revalidations, certificates of addition, utility models and petty patents, including extensions or restorations of terms thereof by existing or future extension or restoration mechanisms (including regulatory extensions), pediatric use extensions, supplementary protection certificates or any other such right, together with any foreign counterparts thereof.

1.107 "**Percentage Increase**" shall have the meaning given in Exhibit C.

1.108 "**Person**" means any individual, Entity or Government Authority.

1.109 "**Pharmacovigilance Agreement**" shall have the meaning given in Section 7.3.

1.110 "**Post-Transfer Period**" means for Europe and the UK, respectively, the period from the transfer date from Atara to Partner of the Marketing Authorization or MAA, as applicable by (a) the EC, or (b) the MHRA, as applicable, onward during the Term.

1.111 "**PPI Index**" shall have the meaning given in Exhibit C.

1.112 "**Pre-Launch**" means all activities undertaken prior to and in preparation for the launch of the Product in the Field in the Territory. Pre-Launch shall include market research, key opinion leader development, advisory boards, medical education, patient associations, disease-related public relations, health care economic studies, sales force training and other pre-launch activities prior to the First Commercial Sale of the Product in a given country, region, or other jurisdiction in the Territory.

1.113 "**Pre-Transfer Period**" means for Europe and the UK, respectively, the period beginning on the Effective Date and ending upon the transfer date from Atara to Partner of the Marketing Authorization or MAA, as applicable by (a) the EC, or (b) the MHRA, as applicable.

1.114 "**Pricing Approval**" means the approval, agreement, determination or decision from a Government Authority establishing the price and/or reimbursement status for the Product for sale in a given country, region or jurisdiction in the Territory, as required by applicable Law in such country or other regulatory jurisdiction prior to the sale of the Product in such country, region or jurisdiction in the Territory.

1.115 "**Primary Indication**" means (as may be amended from time to time in accordance with the terms of this Agreement) EBV+ PTLD in patients who have received at least one prior therapy. For solid organ transplant patients, prior therapy includes chemotherapy, unless chemotherapy is considered inappropriate.

1.116 "**Product**" means tabelecleucel, an allogeneic T-cell immunotherapy selective for the tumor-associated antigens expressed by EBV. Product includes, without limitation, a Combination Product.

1.117 "**Product Supply Price**" shall have the meaning given in Exhibit C.

1.118 "**Product Trade Dress**" means trade dress for use in connection with the Commercialization of the Product in the Field in the Territory.

1.119 "**Product Trademarks**" means (a) the "tab-cel®" trademark owned or Controlled by Atara and designated by Atara for use with the Product in the Territory, and (b) any other trademark owned or Controlled by Atara for use in connection with the Commercialization of a Product in the Field the Territory, each, as listed in Exhibit G.

1.120 "**Promotional Materials**" means all written, printed, video, digital, or graphic advertising, promotional, educational and communication materials (other than the Product Labels and Package inserts) for marketing, advertising, promoting or otherwise Commercializing the Product.

1.121 "**Public Official or Entity**" shall mean (a) an individual or entity operating in an official or public capacity on behalf of a Government Authority (including physicians, hospital administrators, and other healthcare professionals working for or on behalf of state-controlled healthcare organization), (b) any official or employee of a quasi-public or non-governmental international organization, (c) any employee or other person acting for or on behalf of any entity that is wholly or partially government owned or controlled by a Government Authority, (d) any person exercising legislative, administrative, judicial, executive, or regulatory functions for or pertaining to a Government Authority (including any independent regulator), (e) any political party official, officer, employee, or other person acting for or on behalf of a political party and (f) any candidate for public office.

1.122 "**Publishing Party**" shall have the meaning given in Section 14.9(b).

1.123 "**Quality Agreement**" has the meaning given in Section 9.3.

1.124 "**Receiving Party**" shall have the meaning given in Section 14.9(b).

1.125 "**Reference Price**" shall have the meaning given in Exhibit C.

1.126 "**Restricted Product**" shall have the meaning given in Section 8.14.

1.127 "**Regulatory Approval**" means, with respect to a Product in any country, region or jurisdiction, the approvals by the applicable Regulatory Authority in such country, region or jurisdiction necessary for the Commercialization and/or Manufacturing of such Product and including the approval by the applicable Regulatory Authority of any expansion or modification of the Label. For clarity, Regulatory Approval includes, but is not limited to, grant of a Marketing Authorization or a conditional Marketing Authorization.

1.128 "**Regulatory Authority**" means any applicable Government Authority responsible for granting Regulatory Approvals for the Product, including, without limitation, any supra-national agency such as the EMA.

1.129 "**Regulatory Data**" means any and all pharmacology data, chemistry, manufacturing and control data, preclinical data, clinical data, natural history data, including source data, pharmacovigilance data, safety data, and all other documentation submitted, or required to be submitted, to Regulatory Authorities in association with regulatory filings for the Product in the Territory (including any applicable DMFs, CMC data, or similar documentation).

1.130 "**Regulatory Exclusivity**" means, with respect to a Product, that Third Parties are prevented by an applicable Regulatory Authority or country, region or jurisdiction from legally Commercializing a product that could compete with such Product in a country, region or jurisdiction in the Territory other than through Patent Rights (inclusive of, for example, new biologic entity exclusivity, new use or indication exclusivity, new formulation exclusivity, orphan drug exclusivity, pediatric exclusivity, or any applicable data or market exclusivity).

1.131 "**Regulatory Filings**" means, with respect to a Product, any submission to a Regulatory Authority of any appropriate regulatory application specific to the Product and shall include any submission to a regulatory advisory board and any supplement or amendment thereto, including, without limitation, an MAA.

1.132 "**Regulatory Interactions**" means (a) all regulatory actions, communications and filings with, and submissions to, all Regulatory Authorities with respect to a Product, and (b) interfacing, corresponding and meeting with the Regulatory Authorities with respect to a Product.

1.133 "**Regulatory Materials**" means regulatory applications, submissions, notifications, communications, correspondence, registrations, Regulatory Approvals and/or other filings made to, received from or otherwise conducted with a Regulatory Authority that are necessary in order to Develop, Manufacture (subject to the terms of this Agreement), have Manufactured, obtain Marketing Authorization, or otherwise Commercialize the Product in a particular country or regulatory jurisdiction. Regulatory Materials include INDs, MAAs, presentations, and responses.

1.134 "**Representative**" has the meaning in Section 14.1.

1.135 "**Right of Reference**" shall have the meaning set forth in 21 C.F.R. §314.3(b) or equivalents thereto under applicable Law in countries, regions or jurisdictions outside the United States.

1.136 "**Royalty Report**" shall have the meaning given in Section 11.9(a).

1.137 "**Royalty Term**" means, on a country-by-country basis, the Full Royalty Term and the Extended Royalty Term.

1.138 "**Safety Reasons**" shall have the meaning given in Section 16.6.

1.139 "**SEC**" means the U.S. Securities and Exchange Commission.

1.140 "**Selected Manufacturer**" has the meaning given in Section 9.5(b).

1.141 "**Subcommittee**" has the meaning given in Section 4.3.

1.142 "**Supply Price**" means, with respect to a Product, the price at which the Product is supplied to Partner.

1.143 "**Tax Documentation**" means, to the extent required to alleviate withholding on payments made by Partner to Atara under this Agreement, the applicable French tax forms number 5000 and 5003, as such forms may be amended from time to time in accordance with applicable Law duly stamped and validated by the relevant governmental entity with responsibility for taxes in connection with any tax reduction or exemption under any applicable international tax treaty between France and the U.S.

1.144 "**Technology Transfer**" has the meaning given in Section 9.5(b).

1.145 "**Term**" has the meaning given in Section 16.1.

1.146 "**Territory**" means:

(a) Europe, the United Kingdom and Switzerland;

(b) Eastern Europe and Asian countries (specifically and limited to, Albania, Serbia, Bosnia-Herzegovina, Kosovo, Republic of Macedonia, Montenegro, Turkey, Russia, Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Republic of Moldova, Turkmenistan, Ukraine, and Georgia);

(c) African countries (specifically and limited to, Tunisia, Morocco, Algeria, South Africa, Burundi, Republic of the Congo (Brazzaville), Benin, Burkina Faso, Cameroon, Chad, Democratic Republic of the Congo, Ivory Coast, Gabon, Guinea, Libya, Madagascar, Mali, Mauritania, Mauritius, Niger, Senegal, Togo, Djibouti, and Central African Republic); and

(d) Middle East countries (specifically and limited to, Egypt, Iran, Iraq, Saudi Arabia, Yemen, Syria, Jordan, United Arab Emirates, Lebanon, Oman, Kuwait, Qatar, Bahrain).

1.147 "**Third Party**" means any Person other than Atara, Partner and their respective Affiliates.

1.148 "**Transition Period**" has the meaning given in Section 16.8(b)(i)(1) hereto.

1.149 "**Transition Plan**" has the meaning given in Section 5.1, hereto.

1.150 "**United States**" or "**U.S.**" means the United States of America including its territories and possessions.

1.151 "**Upfront Payment**" has the meaning given in Section 11.1, hereto

1.152 "**Valid Claim**" means (a) a claim of an issued and unexpired patent which has not been permanently revoked or declared unenforceable or invalid by an unreversed and unappealable or unreversed and unappealed decision of a court or other appropriate body of competent jurisdiction, or (b) a claim of a pending patent application which claim was filed in good faith, has not been pending for more than [***] from the priority date, and has not been abandoned or finally disallowed without the possibility of appeal or refiling of such application.

Article 2

Licenses; Knowledge Transfer

2.1 Grant to Partner. Subject to the terms and conditions of this Agreement, Atara hereby grants to Partner and its Affiliates during the Term:

(a) an exclusive (except as specified in Section 2.1(c) hereto), remuneration-bearing license with the right to sublicense only in accordance with Section 2.2 under the Atara Intellectual Property to (i) seek and maintain Regulatory Approvals for the Product in the Field in the Territory for the Post-Transfer Period in the European Union and the UK and during the Term in other countries of the Territory, (ii) Commercialize the Product in the Field in the Territory, (iii) perform Territory-specific quality control testing of Product not performed by Atara, and (iv) perform qualified person release and secondary Packaging and Labeling (including accompanying patient-specific information sheet) of the Product for distribution and use in the Territory; and

(b) a co-exclusive with Atara (except as specified in Section 2.1(c) hereto), fully paid-up license with the right to sublicense only in accordance with Section 2.2 under the Atara Intellectual Property to Develop the Product in the Field in the Territory for Commercialization of the Product in the Territory subject, as applicable under the provisions of this Agreement, to JSC's prior review and approval. Partner acknowledges that certain Know-How licensed to Atara by MSK under the Existing Agreement is licensed to Atara on a non-exclusive basis.

(c) **Reserved Rights.**

(i) Atara. Partner acknowledges and agrees that notwithstanding the exclusive rights granted to Partner hereunder, Atara shall retain, on behalf of its Affiliates and Third Party designees, all other rights under the Atara Intellectual Property not specifically licensed to Partner under Section 2.1 including, without limitation the right to (i) conduct and complete the Current Studies, (ii) conduct or have conducted Development activities for Product in the Territory including, without limitation, any Clinical Study relating to the Product, (iii) the right to conduct or have conducted regulatory activities in the European Union and the UK in any applicable Pre-Transfer Period, (iv) the right to Manufacture or have Manufactured the Product for the Territory, and (v) the right to use or have used the Atara Intellectual Property for performing any and all of its obligations under this Agreement, each of (i)-(v) being subject to the terms and conditions of this Agreement and the Ancillary Agreements.

(ii) Third Parties. The U.S. Government and Memorial Sloan Kettering Cancer Center have certain reserved rights pursuant to 35 U.S. Code § 200 et seq., and section 2.4 of the Existing Agreement, respectively.

2.2 Sublicenses.

(a) Partner may sublicense (i) the right to seek and maintain Regulatory Approvals for the Product in the Field in the Territory during the Term in the Territory (except for the Post Transfer Period in the European Union and the UK), if it is necessary under applicable Law for an Approved Sublicensee to hold any Regulatory Approval for the purpose of Commercializing the Product in the Field and in the Territory, (ii) the right to Commercialize the Product in the Field and in the Territory, and (iii) the right to perform Territory-specific quality control testing not performed by Atara, qualified person release and secondary Packaging or Labeling, solely to the extent necessary in countries within the Territory where Partner has no Affiliate responsible for, or capable of, the Commercialization of one or more products within Partner's pharmaceutical oncology product portfolio (each, an "**Approved Sublicensee**"); provided, however, that all such sublicenses with an Approved Sublicensee shall be consistent with the terms of this Agreement and that Partner shall be responsible for performance of Partner's responsibilities under this Agreement to the extent performed on the Partner's behalf by an Approved Sublicensee as if Partner were itself performing such activities. For the avoidance of doubt, an Approved Sublicensee may also have the right to perform Cell Selection services pursuant to Section 8.10. All Approved Sublicensees shall have the necessary financial, regulatory and technical capacity to carry out the portion of Partner's obligations under this Agreement sublicensed thereto and shall be required by Partner to perform all activities under this Agreement in compliance with the terms and conditions of this Agreement, any applicable Ancillary Agreement, and applicable Law. Should Partner sublicense or assign rights to an Affiliate hereunder and such Affiliate subsequently becomes a non-Affiliate, Partner shall provide written notice to Atara within [***] of such change of such non-Affiliate's status and such non-Affiliate shall only be permitted to continue performance under the applicable sublicense or assignment if approved in writing by Atara, such approval not to be unreasonably withheld or delayed. Countries for which Partner intends to use Approved Sublicensees are listed on Exhibit A attached hereto. Any and all sublicenses to Third Parties under this Agreement shall require the prior written consent of Atara, such consent not to be unreasonably withheld, and upon Atara's grant of

consent, and following such consent, shall be deemed Approved Sublicensees hereunder. Partner shall, within [***] after granting any sublicense under this Section 2.2 to a non-Affiliate, notify Atara of the grant of such sublicense and provide Atara with a true and complete copy of such sublicense agreement, provided that such copies of such sublicense agreements may be redacted to omit information (including, without limitation, financial terms) not directly relevant to the performance of Partner's obligations under this Agreement and in the case of an Affiliate, notify Atara of the grant of such sublicense and the identity of the Affiliate. Should it be necessary under applicable Law for an Approved Sublicensee to hold any Regulatory Approval for the purpose of Commercializing the Product in the Field and in the Territory, Partner shall provide prior written notice to Atara of such requirement. [***]. If such Approved Sublicensee is otherwise acting in the capacity of a Distributor as set forth in Section 2.2(b), the financial provisions of Section 2.2(b) shall apply.

(b) Partner may appoint any wholesaler, distributor or reseller for the Product and grant them limited rights under Atara Intellectual Property solely to the extent needed to import, distribute, market, promote or sell the Product in the Field and the Territory (the "**Distributors**"). When appointed, Partner shall use Distributors consistent with how Partner then Commercializes its other oncology products in such countries, provided that in such countries in the Territory where Partner does not book the sales of a Product and elects to use Distributors, Partner uses as a basis for calculating royalty payments due to Atara under Section 11.4 herein [***]. All such distribution arrangements shall be consistent with the terms of this Agreement and shall require the Distributor to comply with all applicable Law, and Partner shall be responsible for performance of Partner's Commercialization responsibilities under this Agreement to the extent performed on the Partner's behalf by a Distributor as if Partner were itself performing such activities. Partner shall, within [***] after entering into a Product distribution agreement with a Distributor, provide Atara with a true and complete copy of such Product distribution agreement, provided that such copies of such distribution agreements may be redacted to omit information (including, without limitation, financial terms) not directly relevant to the performance of Partner's obligations under this Agreement.

2.3 **No Other Rights or Implied Licenses**. Except as specifically set forth in this Agreement, neither Party shall acquire any right, title, license, or other interest, by implication, estoppel or otherwise, with respect to any (a) information, Know-How or materials of the other Party or its Affiliates disclosed or provided to it under this Agreement or (b) under any Patent Rights or other intellectual property rights owned or Controlled by the other Party or its Affiliates.

2.4 **Restrictive Covenants**.

(a) **Ex-Territory Activities and Territory Activities**.

(i) To the extent permitted by applicable Laws, Partner hereby covenants and agrees that it shall not (and shall ensure its Affiliates, Approved Sublicensees and Distributors shall not), either directly or indirectly, market, promote, distribute or sell or otherwise engage in the Commercialization of Product into or within countries outside of the Territory. Without limiting the generality of the foregoing, with respect to such countries outside of the Territory, Partner shall not (and shall ensure its Affiliates, Approved Sublicensees and Distributors shall not) (i) engage in any promotional, advertising, educational, scientific communications,

medical affairs, or similar activities relating to the Product directed to customers or other persons, entities or organizations located in such countries, or (ii) solicit orders from any prospective purchaser located in such countries, provided in each case that Partner, in alignment with plans discussed at the JSC, shall not be restricted from presenting the Product in international congresses, conferences or meetings outside the Territory organized by a professional society outside the Territory, conducting market research outside the Territory with prior consultation, and in coordination with Atara, or from interacting with key opinion leaders outside the Territory, each in connection with the Product.

(ii) To the extent permitted by applicable Laws, and except in order to perform its obligations under this Agreement, Atara hereby covenants and agrees that it shall not (and shall ensure its Affiliates, distributors, and sublicensees shall not), either directly or indirectly, market, promote, distribute or sell or otherwise engage in the Commercialization of Product into or within countries in the Territory. Without limiting the generality of the foregoing, with respect to such countries inside the Territory, Atara shall not (and shall ensure that its Affiliates, distributors, and sublicensees will not) (i) engage in any promotional, advertising, educational, scientific communications, medical affairs, or similar activities relating to the Commercialization of Product directed to customers or other persons, entities or organizations located in such countries, or (ii) solicit orders from any prospective purchaser located in such countries, provided in each case that Atara, in alignment with plans discussed at the JSC, shall not be restricted from presenting the Product in international congresses, conferences or meetings inside the Territory organized by a professional society inside the Territory, conducting market research inside the Territory with prior consultation and in coordination with Partner, or from interacting with key opinion leaders inside the Territory, each in connection with the Product.

(b) **Ex-Field Activities and Field Activities**.

(i) To the extent permitted by applicable Law, Partner hereby covenants and agrees that it shall not (and shall ensure that its Affiliates Approved Sublicensees, and Distributors shall not), either directly or indirectly, market or promote the Product outside the Field. Without limiting the generality of the foregoing, Partner shall not (i) engage in any promotional, advertising, market research, educational, scientific communications, medical affairs, or similar activities relating to the Product directed to use outside the Field, or (ii) solicit orders from any prospective purchaser for use of the Product outside the Field.

(ii) To the extent permitted by applicable Laws, Atara hereby covenants and agrees that it shall not (and shall ensure that its Affiliates, distributors, and sublicensees shall not), either directly or indirectly, market or promote Product inside the Field in the Territory. Without limiting the generality of the foregoing, Atara shall not (i) engage in any promotional, advertising, educational, scientific communications, medical affairs or similar activities relating to the Commercialization of Product inside the Field in the Territory, or (ii) solicit orders from any prospective purchaser for use of the Product inside the Field in the Territory.

2.5 **Existing Agreement**. The licenses and rights granted to Partner under Section 2.1 above include sublicenses of Know-How and Patent Rights existing and licensed to Atara under the Existing Agreement. Any royalty, milestone and other amounts payable to Third Parties in

relation to the licenses granted by Atara under Atara Intellectual Property hereunder, including pursuant to the Existing Agreement, shall be paid by Atara.

Article 3

Right Regarding Option Countries

3.1 [***].

3.2 [***].

3.3 [***].

3.4 [***].

Article 4

Joint Steering Committee

4.1 **Composition**. As soon as practicable, but no later than [***] following the Effective Date, the Parties shall establish a joint steering committee (the "**Joint Steering Committee**" or "**JSC**") as more fully described in this Article 4. The Parties shall each designate three (3) representatives (or such other number as the Parties may agree to) of appropriate seniority and experience to serve on the JSC by written notice to the other Party. Either Party may designate substitutes for its representatives if one (1) or more of such Party's designated representatives are unable to be present at a meeting. From time to time, each Party may replace its representatives by written notice to the other Party specifying the prior representative(s) and their replacement(s). A quorum of the JSC shall exist whenever there is present at a meeting at least two (2) representatives appointed by each Party. The JSC will be co-chaired by one representative each of Partner and Atara. The role of the chairpersons shall be to convene and preside at meetings of the JSC. The chairpersons shall have no additional powers or rights beyond those held by the other JSC representatives. Each Party may also, in its reasonable discretion and with reasonable advanced notice to the other Party, invite a reasonable number of non-member representatives of such Party to attend JSC meetings, as appropriate, to provide input with respect to matters on the agenda.

4.2 **Responsibilities**. In addition to such other duties as specifically assigned to it in this Agreement, in order to facilitate effective Commercialization of the Product in the Field in the Territory by the Partner, the JSC shall:

(a) monitor the general performance of the Parties under this Agreement and decide on corrective action, where required;

(b) serve as the principal means by which each Party keeps the other Party informed about respective activities under the Agreement;

(c) act as the initial point of escalation for issues that cannot be resolved otherwise;

(d) monitor and coordinate the conduct of the Transition Plan;

(e) receive reports relating to, review and discuss the progress of, any ongoing or planned Development activities of the Product in or out of the Field in or out of the Territory, and approve any Development activities of either Party, its Affiliates and their respective licensees or sublicensees of the Product in the Territory as applicable and as required under the provisions of this Agreement, including any proposed study protocols and proposed substantive amendments and updates and any activities conducted pursuant to Sections 6.2(a) and (b) hereof;

(f) review and discuss Commercialization activities and plans as provided pursuant to Sections 8.3 and 8.7 and coordinating with respect to the Global Branding Strategy, and receiving reports relating to market research and pricing and reimbursement status for the Product in the Territory;

(g) review and discuss Product-related medical affairs in the Territory;

(h) receive reports relating to, review and discuss the progress of, and approve (solely as provided in Section 4.8(b)(ii) with respect to the Pre-Transfer Period) material submissions to, or material actions taken with, the EMA or the MHRA pertaining to the Product, including, without limitation, Regulatory Interactions, MAA, and Marketing Authorizations, either in advance or thereafter as determined by required timing for making such material submissions or taking such material actions;

(i) receive reports relating to, and review and discuss Manufacturing and commercial supply plans pertaining to the Product in the Territory including any plans to ensure a continuous and reliable supply of Product in the Territory and approve, as required by the provisions of this Agreement, substantive changes in the supply chain of the Product;

(j) subject to Section 8.10 hereto, review and discuss a potential transition of Cell Selection services from Atara to Partner, its Affiliate or an Approved Sublicensee;

(k) review and discuss patent strategies and prosecution, defence and enforcement actions in relation to the Atara Intellectual Property, in each case solely as it pertains to or may have a material adverse impact on the Territory;

(l) discuss and coordinate any action with respect to alleged infringement of Third Party Patent Rights by Commercialization of the Product in the Field in the Territory, or the Development or Manufacture of the Product for Commercialization in the Field in the Territory;

(m) review reports relating to, and attempts to resolve disputes regarding Development, Manufacturing and/or Commercialization of the Product as it pertains to the Territory; and

(n) Provide a forum of exchange and discussion with respect to regulatory, medical and market access strategies, safety matters, pricing and reimbursement matters, marketing and promotional activities, Patent and manufacturing strategies for the Product globally.

4.3 Subcommittees Establishment. From time to time, the JSC may formally establish one or more subcommittees to review and make recommendations to the JSC with respect to particular projects or activities within their respective authority (each, a "**Subcommittee**"). Each Subcommittee shall consist of equal representation from the Parties (unless the Parties otherwise mutually agree) consisting of individuals with relevant expertise. Such Subcommittees shall operate under the same principles and requirements as are set forth in this Article 4 for the JSC.

4.4 Meetings. The JSC shall hold meetings (a) [***], and (b) at the reasonable request of either Party upon as much reasonable notice as is practicable, but not less than [***] prior written notice to the other Party, to review, discuss, or approve, as applicable, an urgent matter within the scope of the JSC's responsibilities, in each case, at such times and places as shall be determined by the JSC (including by videoconference, telephone, or web conference). The JSC may act without a meeting if prior to such action a written consent thereto is given by both Parties. Each Party shall be responsible for all its costs incurred for attending and participating in JSC meetings.

4.5 Minutes. Minutes will be kept of all JSC meetings by the Alliance Managers and the minutes prepared by the Alliance Managers will be sent to all members of the JSC for review and approval within [***] after each meeting. Minutes for each meeting shall objectively reflect, in reasonable detail, the proceedings of such JSC meeting, including, without limitation, the topics reviewed and discussed at such JSC meeting, and the actions and decisions taken, authorized to be taken or approved to be taken by either or both of the Parties at such meeting. In the event of any objection that is not resolved by mutual agreement of the Parties, such minutes will be amended to reflect such unresolved dispute and such dispute shall be reviewed and discussed at the next regular JSC meeting.

4.6 Alliance Managers. As soon as practicable, but no later than [***] following the Effective Date, each Party will appoint a representative of such Party to act as its alliance manager under this Agreement (each, an "**Alliance Manager**"). Each Party may replace its Alliance Manager at any time by written notice to the other Party. The Alliance Managers will serve as the primary contact point between the Parties and shall be entitled to attend all JSC and Subcommittee meetings, except if the other Party specifically requests the exclusion of Alliance Managers (including its own Alliance Managers) from a particular meeting. Each Alliance Manager may bring any matter to the attention of the JSC or Subcommittees where such Alliance Manager reasonably believes that such matter requires attention of the JSC or Subcommittees. Each Alliance Manager shall be responsible with creating and maintaining a collaborative work environment within and among the JSC and Subcommittees.

4.7 Scope of Governance. Notwithstanding the creation of the JSC and/or any Subcommittee, each Party shall retain the rights, powers and discretion granted to it hereunder, and the JSC and/or any Subcommittee shall not be delegated or vested with rights, powers or discretion unless such delegation or vesting is expressly provided herein, or the Parties expressly

so agree in writing. The JSC and/or any Subcommittee or any Party's exercising its decision making shall not have the power to amend or modify this Agreement, and no decision of the JSC and/or any Subcommittee or a Party's exercising its decision making shall be in contravention of any terms and conditions of this Agreement. The Alliance Managers shall not have any rights, powers or discretion except as expressly granted to the Alliance Managers hereunder and in no event shall the Alliance Managers have any power to modify or amend this Agreement. It is understood and agreed that issues to be formally decided by the JSC and/or any Subcommittee, as applicable, are only those specific issues that are expressly provided in this Agreement to be decided by the JSC and/or any Subcommittee, as applicable.

4.8 Decision Making.

(a) **Generally**. Except as otherwise expressly provided herein, decisions of the JSC or any Subcommittee established under this Article 4 shall be made by consensus, with each Party having collectively one (1) vote in all decisions, with the goal being to leverage capabilities, minimize cost and maximize the chance of successfully Commercializing the Product first in the European Territory as a whole, and then throughout the Territory as a whole, in a manner consistent with applicable Laws and this Agreement. The Parties agree to make all decisions and to escalate all associated disputes in a timely manner, appropriate for each circumstance.

(b) **Dispute Escalation and Final Decision-Making Authority**. In the event that the JSC is unable to reach a consensus on decisions expressly requiring JSC approval pursuant to this Agreement despite good faith efforts to do within [***] after it has met and attempted to reach such decision, then either Party may, by written notice to the other, have such issue referred to the Chief Executive Officer of Atara or such other person holding a similar position designated by Atara from time to time, and the Chief Executive Office of Partner or such other person holding a similar position designated by Partner from time to time (collectively, the "**Executive Officers**"), for resolution. The Executive Officers shall meet within [***] of referral of the issue to the Executive Officers to discuss the matter submitted and to determine a resolution. If the Executive Officers are unable to determine a resolution in a timely manner, which shall in no case be more than [***] after the matter was referred to them, despite good faith efforts to do so, then except as specifically allocated under this Agreement:

[***].

Article 5

Transition Plan

5.1 Transition Plan.

(a) **Transfer**. A transition plan for regulatory affairs, commercial and market access, supply chain, medical affairs, and pharmacovigilance activities to be carried out under this Agreement and the Ancillary Agreements (the "**Transition Plan**") is attached hereto as Exhibit B. Each of Atara and Partner shall use Commercially Reasonable Efforts to carry out the activities as specifically set forth in the Transition Plan within the time set forth in the Transition Plan. Atara shall use Commercially Reasonable Efforts to make available to Partner all data and such other

documents as set forth under the Transition Plan as soon as reasonably practicable and in any event, within the time period set forth in the Transition Plan. Besides the Transition Plan, Atara shall provide reasonable assistance to Partner, subject to Atara's available capacity to provide such assistance without incurring significant cost, to ensure a smooth and effective transfer of any Regulatory Filings, Atara Intellectual Property, Development Data, medical activities and marketing materials developed by Atara with respect to the Product.

(b) **Subsequent Transfers**. Before the transfer date from Atara to Partner of the Marketing Authorization or MAA, as applicable, by (a) the EC, or (b) the MHRA, as applicable, Atara shall deliver as soon as reasonably practicable any and all Atara Intellectual Property, together with supporting documentation as each may become Controlled by Atara, and provide reasonable assistance to Partner which is necessary or reasonably useful for Partner to Develop, Commercialize the Product in the Field and the Territory, perform Territory-specific quality control testing of Product not performed by Atara, and perform qualified person release and secondary Packaging and Labeling (including accompanying patient-specific information sheet) of the Product for distribution and use in the Territory in compliance with Law.

Article 6

Development Matters

6.1 Responsibilities – Primary Indication and Clinical Studies.

(a) Atara shall be solely responsible, at its sole cost and expense, to use Commercially Reasonable Efforts to conduct the Atara 302 Study as currently designed and ongoing as of the Effective Date and, if required by the Regulatory Authority to obtain Regulatory Approval for the Product in the European Territory for the Primary Indication, to conduct CMC and comparability studies.

(b) Atara shall take commercially reasonable steps, at its sole cost and expense, to conduct any other Clinical Study or other Development (excluding Observational Studies) that is required by the Regulatory Authority to obtain Regulatory Approval for the Product in the European Territory for the Primary Indication. Such other Clinical Study or other Development shall be subject to JSC's prior review and approval. If Atara determines that it is not commercially reasonable to conduct any such other Clinical Study or other Development, it shall promptly inform Partner without delay. Then, without prejudice to Partner's rights hereunder, Partner may then elect to conduct such other Clinical Study or other Development, in which case Section 11.12 shall apply.

(c) Subject to Section 6.1(b) hereto, [***]. Partner shall promptly inform Atara of any Development Data generated therefrom and provide such Development Data to Atara pursuant to Section 6.6.

(d) For clarity, other than as set forth in Section 6.1(a), Atara shall have no obligation to conduct any Clinical Study or any Development for the Product for use in the Primary Indication in any country, region, or jurisdiction.

6.2 Responsibilities - Additional Indications and Clinical Studies.

(a) Atara shall (i) be solely responsible, at its sole cost and expense, to use Commercially Reasonable Efforts to conduct the Atara 205 Study as currently designed and ongoing as of the Effective Date, and (ii) have the right, but not the obligation, at its sole cost and expense, outside the Territory, to carry out any other Development pertaining to a Multi-Cohort Indication or to carry out all Development of the Product as it pertains to all other Additional Indications. Except for the Atara 205 Study, should any other Development activities to be conducted by Atara pursuant to this Section 6.2(a) propose to include one or more clinical trial site(s) physically located within a country in the Territory, inclusion of such clinical trial sites shall be subject to the JSC's prior review and approval. Atara shall promptly inform Partner of any Development Data generated therefrom and provide such Development Data to Partner pursuant to Section 6.6.

(b) Except as set forth in Section 6.1 and if not Developed or elected to be Developed by Atara pursuant to Section 6.2(a), if either Party wishes to propose any other Development of the Product for (i) the Primary Indication or (ii) an Additional Indication, in each case, in the Territory, or provide support for any Investigator Sponsored Clinical Trial to be conducted in the Territory ("**New Development**"), including potential sharing of the responsibility for the operation and/or cost of such proposed Development of the Product, said Party shall (1) prepare a reasonably detailed summary of the New Development and proposed activities and budget related thereto, including the roles and responsibilities of each Party with regard to such activities and budget, and (2) present such proposal to the JSC for discussion. The Parties agree to discuss any such proposal(s), including any associated Development plan and the allocation of responsibility between Atara and Partner for the associated Development plan, operation thereof, and costs associated with such plan. Such New Development shall be subject to JSC's prior review and approval.

6.3 General. Notwithstanding any other provision in this Agreement, in no event shall Partner be obliged to conduct Development activities and no such Development activities shall be deemed commercially reasonable to assess Partner's Commercialization obligations hereunder.

6.4 Reports . The status, progress and results of the Development carried out under this Article 6 shall be discussed at meetings of the JSC, and the responsible Party shall provide the JSC with a written report with reasonable detail on the status and progress of such Development activities at least [***] prior to each scheduled JSC meeting.

6.5 Records . The Party carrying out Development activity shall use Commercially Reasonable Efforts to maintain complete, current and accurate records of all Development conducted by it and all Development Data resulting from such work. The Parties shall cause their Affiliates, sublicensees and subcontractors (as applicable) to maintain complete, current and accurate records of all Development work conducted by such Affiliates, sublicensees or subcontractors (as applicable) and data and other Information resulting from such work. Such records shall fully and properly reflect all work done and results achieved in the performance of the Development activities in good scientific manner appropriate for regulatory purposes.

6.6 Ownership of Development Data and Partner Inventions. All data (including, without limitation, pre-clinical, clinical, technical, chemical, safety, and scientific data and information, but excluding a closed portion of a DMF), Know-How and other results generated by or resulting from or in connection with the conduct of Development, including screening data, Regulatory Data and synthesis schemes (collectively, the "**Development Data**"), shall be owned solely and exclusively by the Party conducting such Development unless otherwise agreed in writing. Atara shall provide Partner with all Development Data deriving from any and all Development for which Atara is responsible to the extent such is necessary or reasonably useful for Partner to Commercialize Product, seek and maintain Regulatory Approvals for the Product in the Field in the Territory and perform Territory-specific quality control testing not performed by Atara, qualified person release and secondary Packaging and Labeling (including accompanying patient-specific information sheet) of the Product for distribution and use in the Field in the Territory. Partner shall provide Atara with all Development Data deriving from any and all Development for which Partner is responsible, and, if Atara so elects pursuant to Section 11.12, Partner shall grant to Atara a non-exclusive, fully paid up, sublicensable, perpetual and irrevocable license under any such Development Data to Develop, Manufacture, Commercialize and otherwise use the Product outside of the Territory. To the extent that Partner, in the course of conducting any of its authorized activities under this Agreement, has developed and Controls Patent Rights or Know-How that are necessary or reasonably useful for the Development, Manufacture, Commercialization, or other use of the Product ("**Partner Intellectual Property**"), Partner shall and hereby does grant to Atara a non-exclusive, sublicensable, perpetual, irrevocable license, under any such Partner Intellectual Property to Develop, Manufacture, Commercialize and otherwise use the Product outside of the Territory, subject to the provisions of Section 11.12.

6.7 Right to Audit Development Activities. During the Term and subject to the requirements of applicable Law and Third Party confidentiality restrictions or obligations (provided that each Party shall use reasonable efforts to ensure that any Third Party agreements entered into after the Effective Date do not prevent the exercise of such rights), each Party shall allow the other Party's authorized Representatives, to the extent permitted by applicable Law, during regular business hours and upon at least [***] prior notice, not more than [***] (except for cause), to (i) examine and inspect such Party's facilities and the facilities of any subcontractor used in the performance of Development of the Product in the Field in the Territory hereunder, and (ii) inspect all data, documentation and work product relating to the activities performed by such Party or any subcontractor.

6.8 Right of Reference. Subject to Section 11.12, each Party shall have the right to cross-reference the Regulatory Filings Controlled by the other Party under this Agreement relating to the Product (including each other's, and their Affiliate's or, in the case of Atara, its sublicensees', and in the case of Partner, its Approved Sublicensees', DMF), and to access such Regulatory Filings and any Development Data for (i) in the case of Partner, during the Term, any activity relating to obtaining or maintaining Regulatory Approval for the Product, or for Development or Commercialization of the Product in the Field in the Territory, including, to the extent allowed under applicable Law, inclusion of such Development Data in its own Regulatory Filings for the Product, and (ii) in the case of Atara, (1) any activity relating to obtaining or maintaining Regulatory Approval for the Product, or for Development or Commercialization of the Product outside the Territory, and (2) any activity relating to conducting Development of the Product or obtaining or maintaining Regulatory Approval for the Product, in each case outside the

Field in the Territory, including, to the extent allowed under applicable Law, inclusion of such Development Data in its own Regulatory Filings for the Product. Subject to the provisions of this Section 6.8, each Party hereby grants to the other Party, its Affiliates, subcontractors (as applicable), a "Right of Reference," as that term is defined in 21 C.F.R. § 314.3(b) in the United States, or an equivalent right of access/reference in any other country or region, to any Development Data, including such Party's or its Affiliate's clinical dossiers, Controlled by such Party or such Affiliates that relates to the Product solely for use for the purposes specified in this Section 6.8.

Article 7

Regulatory Matters

7.1 Obtaining Regulatory Approval.

(a) **Europe and United Kingdom - Primary Indication** . Subject to Section 4.8(b)(ii) hereto, during the Pre-Transfer Period, Atara shall be responsible, at its sole cost and expense, for all activities directed to, and decisions pertaining to, obtaining Regulatory Approval (including the preparation and filing of all Regulatory Materials, including, without limitation, any MAA, and all Regulatory Interactions) for the Product for the Primary Indication by centralized procedure or any other procedure in Europe and in UK; provided, however, that to the extent lawful, practical, and without causing any undue delay, Atara shall promptly submit to Partner all material correspondence received from a Regulatory Authority with respect to such Regulatory Approvals, as well as all relevant draft filings or draft material correspondence with the Regulatory Authorities with reasonable lead time, which shall not be less than [***] for correspondence with the EMA and the MHRA relating to negotiation of the Label, to allow Partner to comment on such drafts, and take into account Partner's reasonable comments on such correspondence or filings. To the extent practical and without causing any undue delay, and to the extent permitted by the Regulatory Authority, Atara shall permit an appropriate representative of Partner to attend any meeting with Regulatory Authorities relating to obtaining such Regulatory Approvals as a silent observer under Atara' supervision.

(b) **Other Regulatory Approvals.** Without prejudice to Sections 6.3 and 11.12, and with the exception of activities under Atara's responsibility pursuant to Section 6.1 and 6.2 and other than those specified in Section 7.1(a), Partner, its Affiliates and their Approved Sublicensees shall be responsible, at their sole cost and expense, for all activities directed to or required for obtaining, holding, and maintaining all Regulatory Approvals (including, without limitation, for the preparation and filing of all Regulatory Materials and all Regulatory Interactions) and Marketing Authorizations for the Product in the Field in the Territory, subject to the oversight of the JSC, in accordance with Section 4.8 hereto; provided, however, that to the extent lawful, practical, and without causing any undue delay, Partner shall promptly submit to Atara all material correspondence received from the EMA and the MHRA with respect to such Regulatory Approvals of the Product, as well as all material draft filings or draft material correspondence with the EMA and the MHRA with reasonable lead time, which shall not be less than [***] for correspondence with the EMA and the MHRA relating to revision of the Label, to allow Atara to comment on such drafts, and take into account Atara's reasonable comments on such correspondence or filings. Atara shall provide reasonable support, subject to Atara's

available capacity to provide such support without incurring significant cost, to Partner's regulatory activities set forth in this Section 7.1(b). Partner, its Affiliates and their Approved Sublicensees shall own all regulatory submissions, including all applications, for Regulatory Approvals for the Products in the Field in the Territory, and shall not engage in any Regulatory Interaction in any country outside the European Territory and Switzerland, prior to receipt of an MA for the Primary Indication in the European Territory.

(c) **Reports** . The status, progress, and results of a Party's efforts to obtain Regulatory Approval for the Product under this Article 7 shall be discussed at meetings of the JSC, and each Party shall provide the JSC with a written report on the status and progress of such activities at least [***] prior to each scheduled JSC meeting. In addition, a Party shall make available such information about such activities as may be reasonably requested by the other Party from time to time. In addition, Atara shall keep Partner reasonably updated with respect to matters pertaining to Regulatory Interactions and Regulatory Filings for the Product in the U.S. solely to the extent such matters are reasonably likely to impact in any material respect Regulatory Filings and Regulatory Approvals in the European Territory.

7.2 **Transfer of Marketing Authorization for Europe and UK - Primary Indication.** Following the EC grant and the UK's grant of a Marketing Authorization for the Product for the Primary Indication in Europe and the UK, respectively, Atara will file an application for the transfer of the associated Marketing Authorization, the Orphan Drug Designation and any other necessary Regulatory Approval for the Product in Europe and the UK, to Partner within [***] of receipt of said Marketing Authorization, unless otherwise agreed between the Parties and subject to applicable regulatory requirements. Pending such transfer, Atara shall hold the Marketing Authorization and [***]. Subsequent to the transfer of the Marketing Authorization by Atara to Partner under this Section 7.2, Partner shall be responsible, at its sole cost and expense, for all activities directed or required to holding and maintaining such Marketing Authorization including, without limitation, for payment of all associated fees and taxes, if any, and will have no right to transfer, assign or grant any encumbrance or other right on, or under, any Marketing Authorization for the Product in in the Territory, except to Approved Sublicensees, without the prior written consent of Atara, which may not be unreasonably withheld or delayed. Notwithstanding any provision to the contrary in this Section 7.2, the Parties may mutually agree to transfer the MAA and Orphan Drug Designation during the centralized procedure in Europe and/or the UK procedure prior to the grant of the associated Marketing Authorization.

7.3 **Pharmacovigilance**. Within [***] from the Effective Date, and before the transfer of the Regulatory Approval or MA for the Product in Europe and the UK for the Primary Indication, the Parties will negotiate and execute in good faith a mutually agreed pharmacovigilance agreement in customary form (the "**Pharmacovigilance Agreement**") delineating the processes and procedures for sharing safety information with respect to the Product that are customary for agreements of this type. The Pharmacovigilance Agreement shall, among other things, require each of Atara and Partner to inform the other as soon as is practicable of any observed significant safety issue considered likely to have an adverse impact on Commercialization of the Product.

7.4 Global Safety Database.

(a) **Responsibility**. Atara will establish and maintain a Global Safety Database that will contain all information and data arising from the Parties' activities with respect to safety matters that is required to be contributed by each party pursuant to the Pharmacovigilance Agreement, including information and data arising out of any risk evaluation and mitigation strategy (REMS) and/or risk management plan (RMP), periodic safety reports and safety monitoring activities.

(b) **Reporting**. Atara or Atara's designee shall be responsible for collecting and submitting safety case reports to the applicable Regulatory Authorities for all countries outside of the Territory. During an applicable Pre-Transfer Period, Atara or Atara's designee shall be responsible for collecting and submitting safety case reports to the applicable Regulatory Authorities for Europe and the UK, as applicable. Thereafter, Partner shall be responsible for submitting all safety case reports to the applicable Regulatory Authorities within the Territory. Each Party shall share all safety case reports with the other Party pursuant to the terms of the Pharmacovigilance Agreement.

7.5 Early Access Programs. Atara shall be responsible, at its sole cost and expense, for operationally managing and conducting the Early Access Programs for Product outside the Territory. Atara shall have the right, but not the obligation (unless required under applicable Law in any country, region or jurisdiction, as applicable, in the Territory), to conduct the Atara 902 EAP Observational Study and/or the Atara EU EAP/SPU Program in the Territory. With respect to the EU or the UK, as applicable, and unless otherwise agreed between the Parties through the JSC, Atara shall be responsible for operationally managing and conducting the Atara 902 EAP Observational Study and/or the Atara EU EAP/SPU Program in Europe or the UK, as applicable, [***]. Partner shall be responsible, at its sole cost and expense, for any other Early Access Programs for Product in the Territory after the Effective Date, provided, however, Partner may not initiate or conduct any Early Access Program activities relating to (a) the Primary Indication prior to obtaining Marketing Authorization for the Product for the Primary Indication in the European Territory or (b) for a Multi-Cohort Indication prior to obtaining Marketing Authorization for a Multi-Cohort Indication in the European Territory, in each case, without the prior written consent of Atara.

7.6 Regulatory Audits. The Parties shall cooperate in good faith with respect to Regulatory Authority inspections of any site or facility, including, without limitation, where Clinical Studies, CMC, or pharmacovigilance activities with respect to the Product are conducted by or on behalf of a Party pursuant to this Agreement, whether such site or facility is such Party's or its Affiliate's or Approved Sublicensee's, subject to terms and conditions of Third Party agreements (provided that each Party shall use reasonable efforts to ensure that Third Party agreements do not prevent the exercise of such rights), and shall inform each other of such Regulatory Authority inspection within [***] from its notification. Each Party shall be given a reasonable opportunity (taking into account the timing and notice provided by the applicable Regulatory Authority) to assist in the preparation of the other Party's audited sites for inspection, where appropriate, and to attend any inspection by any Regulatory Authority of the other Party's audited sites, and the summary, or wrap-up, meeting with a Regulatory Authority at the conclusion of such inspection. If such attendance would result in the disclosure to the other Party of

Confidential Information unrelated to the subject matter of this Agreement, the Parties shall enter into a confidentiality agreement covering such unrelated subject matter. In the event that any audited site is found to be non-compliant with one or more GLP, GCP, or current standards for pharmacovigilance practice, the non-compliant Party shall submit to the other Party a proposed recovery plan within a reasonable period after such non-compliant Party, its Affiliate or its Approved Sublicensee receives notification of such non-compliance from the relevant Regulatory Authority and such non-compliant Party shall use commercially reasonable efforts to implement such recovery plan promptly after submission.

Article 8

Commercialization and Promotion Matters

8.1 Responsibilities. Subject to Section 8.2 hereto, during the Term, Partner shall be solely responsible, at is sole cost and expense, for Commercializing the Product in each country in the Territory in accordance with this Agreement and with all applicable Laws, subject to the oversight of the JSC, as provided herein.

8.2 Diligence. Partner shall utilize Commercially Reasonable Efforts to perform its obligations and to carry out its responsibilities under this Agreement with respect to the Commercialization of the Product in the Field in the Primary Indication and in any other indication, in each case if and when Regulatory Approval and Pricing Approval of the Product is obtained for such indication(s), [***]. Partner agrees to use reasonable efforts to assess Commercialization opportunities for the Product in the Primary Indication in all other countries in the Territory, and to incorporate the results of such assessments from time to time into the Commercialization Plan to be discussed by the JSC.

8.3 Commercialization Plan. Within a reasonable period of time of the Effective Date, but in any case no later than within [***] prior to the Parties' estimated Marketing Authorization approval date for the Product for the Primary Indication in Europe, Partner will present an outline of its Commercialization plans for the Product in the Territory including [***]. Partner will provide an update of its Commercialization activities and plans on [***], for discussion by the JSC.

8.4 Pricing. Partner shall, at its sole cost and expense, be solely responsible for obtaining and maintaining Pricing Approvals in the Territory where applicable and subject to Section 8.2, Partner shall use Commercially Reasonable Efforts to obtain Pricing Approvals where applicable in [***], subject to review and discussion by the JSC under Section 4.2 hereto, taking into account [***]. Partner shall also be solely responsible, at its sole cost and expense, for setting and managing local pricing and reimbursement, as well as Product launch sequencing, subject to review and discussion by the JSC. To the extent permitted by applicable Law, and unless necessary for the purpose of obtaining Pricing Approval for the Product in any country in the Territory, Partner shall not publicly disclose information on discounts and rebates relating to the pricing of Product in such country in the Territory.

8.5 Promotional Materials. Subject to Section 8.9 hereto, Partner shall, at its own expense, have the right to create, develop, produce or otherwise obtain, and utilize Promotional

Materials to support the Commercialization of the Product in the Field in the Territory, it being specified that Atara shall provide existing Promotional Materials to Partner as part of the Transition Plan, including those currently existing and intended for use by Atara in the United States. Partner shall provide to the JSC for review and discussion a prototype of core Promotional Materials by Partner, without an obligation to provide any local Promotional Materials. Partner shall modify such Promotional Materials to the extent necessary to resolve any objections timely and reasonably made by Atara to such Promotional Materials on the grounds that such Promotional Materials are inconsistent with any legal requirements, and shall in good faith consider any of Atara's other objections. The Promotional Materials, and any aspects of those uniquely tied to the Product, shall be used by Partner, its Affiliates and their Approved Sublicensees exclusively in connection with the Commercialization of the Product in the Field in the Territory in accordance with the terms of this Agreement, and Partner shall not use, or allow any other Person (other than its Affiliates and Approved Sublicensees) to use, any such Promotional Materials except in accordance with this Agreement.

8.6 Ownership and Use of Product Trademarks and Product Trade Dress.

(a) **Ownership.** Partner acknowledges the sole ownership by Atara and validity of all Product Trademarks, Product Trade Dress, logos and slogans used or intended to be used specifically in connection with the Commercialization of the Product for the Field in the Territory. Partner shall assign (and shall cause its Affiliates and Approved Sublicensees to assign), and hereby does assign to Atara, all of its right, title and interest in and to such Product Trademark and Product Trade Dress, if any. Partner agrees that it will not at any time during or after the Term assert or claim any interest in or do anything which may adversely affect the validity or enforceability of, any copyright, trademark, trade dress, logo or slogan owned by Atara and used or intended to be used on or in connection with the marketing or sale of the Product in the Field in the Territory. Partner will not register, seek to register or cause to be registered any copyrights, trademarks, trade dress, logos or slogans owned by Atara and used or intended to be used on or in connection with the marketing or sale of the Product in the Field in the Territory or any variation thereof, under any applicable Law providing for registration of copyrights, trademarks, service marks, trade names or fictitious names (including as an Internet domain name) or similar Laws, without Atara's prior written consent, which may be withheld in its sole discretion.

(b) **Maintenance.** Atara shall establish, maintain and enforce the Product Trademarks in the Territory and will bear all costs and expenses relating thereto.

(c) **Use.** All uses of the Product Trademarks and Product Trade Dress by Partner (and its Affiliates and Approved Sublicensees) to identify and/or in connection with the Commercialization of the Product in the Field in the Territory shall be in accordance with Regulatory Approvals and all applicable Laws. Partner (and its Affiliates and any Approved Sublicensees) shall use the Product Trademarks and Product Trade Dress solely pursuant to the terms of this Agreement to identify and in connection with the Commercialization of the Product in the Territory for use in the Field, and Partner shall not (and shall cause its Affiliates and Approved Sublicensees not to) use such Product Trademarks or Product Trade Dress to identify or in connection with the marketing of any other products. Atara shall also own rights to any internet domain names incorporating the Product Trademarks or any variation or part of such trademark as its URL address or any part of such address; and Partner shall not establish any

internet domain name or URL incorporating such trademark without the prior written consent of Atara, such consent not to be unreasonably withheld. The Parties hereby agree and acknowledge that nothing contained herein shall limit Atara's right to use the Product Trademarks or Product Trade Dress outside the Territory.

8.7 **Reports**. The status, progress and results of Partner's Commercialization activities of the Product in the Territory shall be discussed at meetings of the JSC, and Partner shall provide the JSC with a written report on the status and progress of such activities at least [***] prior to each scheduled JSC meeting. In addition, Partner shall make available such information as may be reasonably requested by Atara from time to time.

8.8 **Compliance**. Each Party shall, in Developing, Manufacturing, seeking Regulatory Approval and Commercializing the Product in the Territory, comply with all applicable Laws, including the Anti-Corruption Laws, as well as all applicable Regulatory Approvals for the Product. In addition, each Party shall not use in any capacity, in connection with its Development or Commercialization of the Product hereunder, any Person who has been debarred pursuant to Article 306 of the Federal Food, Drug and Cosmetic Act (or similar Law outside of the U.S.), or who is the subject of a conviction described in such Article, and each Party shall inform the other in writing immediately if it or any Person who is performing services for such Party hereunder is debarred or is the subject of a conviction described in Article 306 (or similar Law outside of the U.S.), or if any action, suit, claim, investigation or legal administrative proceeding is pending or, to such Party's knowledge, is threatened, relating to the debarment of such Party or any Person used in any capacity by such Party in connection with its Development or Commercialization of the Product hereunder.

8.9 **Global Branding Strategy.** Atara shall have the right, from time to time during the Term, to implement (and thereafter modify and update) a global branding strategy, including global messaging and imagery, for the Product for use in the Field throughout the world (the "**Global Branding Strategy**"). To the extent Atara determines to implement use of such Global Branding Strategy, Partner shall use Commercially Reasonable Efforts to adhere to the Global Branding Strategy in its Commercialization of the Product in the Field in the Territory including with respect to any Promotional Materials; provided, that, in the event that Partner believes that the application of the Global Branding Strategy in a particular country in the Territory would be inappropriate whether because of such country's linguistic or cultural particularities, because it is against the Laws of such country, because of risk of infringing Third Party rights or because Partner reasonably determines it would be inconsistent with Partner's obligation to use Commercially Reasonable Efforts to Commercialize the Product in the Field in the Territory, Partner will not be obliged to apply such Global Branding Strategy.

8.10 **Cell Selection**. Upon grant of a Marketing Authorization, and prior to [***], Atara shall provide Cell Selection services for the Product in the Field for Commercialization in the Territory, to Partner and its Affiliates and their Approved Sublicensees, at the sole and exclusive cost of Atara. [***]. If the Parties mutually agree that Atara shall continue to provide such Cell Selection services to Partner after [***], Atara's provision of such Cell Selection services shall be at the sole and exclusive cost and expense of Partner, in accordance with Exhibit F attached hereto. [***].

8.11 **Notification.** Each Party shall promptly notify the other Party if such Party becomes aware of any information that is likely to have a material adverse effect upon Partner's ability to successfully Commercialize the Product in the Field in the Territory or Atara's ability to successfully Commercialize the Product in the Field outside the Territory.

8.12 **Order Handling. Order to Cash**. Partner shall be solely responsible, at its sole cost and expense, for order intake and order management, as well as invoicing and cash collection (order-to-cash) for sale of the Product in the Territory.

8.13 [***].

8.14 **Limitation on Activities Inside the Field and Territory**. From the Effective Date through the period that is [***] after the Effective Date (the "**Limited Period**"), Atara, its Affiliates and their respective licensees and sublicensees shall not, other than the Development of the Product in the Territory as specifically authorized under this Agreement, Develop nor Commercialize any product comprising [***]. For the avoidance of doubt, a chimeric antigen receptor T-cell shall not constitute an allogeneic EBV-specific cytotoxic T-cell but shall constitute a cell therapy product. Following the Limited Period and during the Term, [***] . The provisions of this Section 8.14 shall not apply to any Restricted Product, Restricted Product candidate or development program of an acquiror of Atara, including its Affiliates or subsidiaries, in each case, existing as of the date of the acquisition by such acquiror of Atara, [***].

8.15 **Partner Non-Compete**. During the Limited Period, none of Partner, its Affiliates and the Approved Sublicensees shall directly or indirectly Commercialize, or enable any such Affiliate, Approved Sublicensee to Commercialize, any Restricted Product, other than Product, in the Territory. Following the Limited Period, none of Partner, its Affiliates and the Approved Sublicensees shall directly or indirectly Commercialize, or enable any such Affiliate, Approved Sublicensee to Commercialize, any Restricted Product, other than Product, in any country, region, or jurisdiction in the Territory, which Restricted Product that is the subject of [***]. The provisions of this Section 8.15 shall not apply to any Restricted Product of an acquiror of Partner, including its Affiliates or subsidiaries, in each case, existing as of the date of the acquisition by such acquiror of Partner, [***].

8.16 **Limitation on Pursuit of Generic Product**. During the Term, none of Partner or its Affiliates, Approved Sublicensees, or Distributors shall (a) practice, or authorize any Third Party to practice, any Atara Intellectual Property for any purpose other than as expressly authorized in this Agreement, (b) take any action to seek, or engage in, the Development, Regulatory Approval, Manufacture or Commercialization of a Generic Competitor or (c) enable any Third Party to do the same.

Article 9

Manufacturing and Supply Matters

9.1 **Manufacturing and Supply Agreement**. Within [***] from the Effective Date, the Parties will negotiate and execute a manufacturing and supply agreement (the "**Manufacturing and Supply Agreement**" or "**MSA**") on mutually agreed terms and conditions for the

Manufacture and supply of the Product that are customary for agreements of this type. Partner shall purchase from Atara or its Affiliates all of Partner's, and its Affiliates' and Approved Sublicensees' requirements of Product in the Field in the Territory pursuant to the terms and conditions of the MSA. Key terms relating to Atara's Manufacture and supply of Product for Partner that are to be incorporated into the Ancillary Agreements are summarized in Exhibit C attached hereto.

9.2 Diligence. Atara shall perform and carry out its Manufacturing responsibilities set forth in this Agreement and the MSA, as applicable.

9.3 Quality Agreement. Within [***] from the Effective Date and concomitant with the MSA, the Parties will negotiate and execute a quality agreement (the "**Quality Agreement**") on mutually agreed terms and conditions for the manufacture and supply of the Product that are customary for agreements of this type, including customary audit rights of Atara Manufacturing Facility.

9.4 Return of Product. All returns of Product shall be in accordance with a mutually agreed Product return protocol, as to be further specified in the MSA.

9.5 Atara Supply Obligation.

(a) The obligations of Atara under this Article 9, including the obligations to Manufacture (or have Manufactured by an Atara Manufacturing Facility) and supply Product to Partner hereunder, shall continue (on a country-by-country and Product-by-Product basis) through to the end of the Royalty Term with respect to such Product in such country; provided, however, as to be further detailed in the MSA, at any time after a period of [***] from the First Commercial Sale of the Product in the Territory, upon Atara's delivery of written notice to Partner, Atara may elect to transfer its global Manufacturing responsibilities for the Product to a qualified Third Party facility that is not an Atara Manufacturing Facility (the "**Atara CMO**").

(b) At least [***] before Atara's delivery of the written notice in Section 9.5(a), Atara shall inform Partner of its intent to deliver such written notice, at which time Partner may choose to assume directly, or through any qualified designee of Partner approved in advance by Atara, the Manufacturing of the Product for the Territory, or to rely on the Atara CMO (the supplier so elected by Partner, including Atara CMO where applicable, being referred to as the "**Selected Manufacturer**"). If so elected by Partner, Atara shall use Commercially Reasonable Efforts to enable Partner to negotiate with Atara CMO for the supply of the Product for the Territory at terms and conditions substantially as favorable as those of Atara. Atara shall use Commercially Reasonable Efforts to (i) transfer to the Selected Manufacturer technology, materials, and other Know-How required to enable them to Manufacture Product for all of Partner's authorized uses in the Field and in the Territory under this Agreement (the "**Technology Transfer**") and (ii) complete the Technology Transfer within [***] of Atara's written notice to Partner of Atara's election to conduct the Technology Transfer. Atara shall bear the associated costs for such Technology Transfer, to be further detailed in the MSA.

(c) Until completion of the Technology Transfer to the Selected Manufacturer and revision of all Regulatory Approvals related to the Commercialization of the Product in the

Territory to reflect such Selected Manufacturer as the Manufacturer, Atara shall continue to (i) Manufacture, or have Manufactured by an Atara Manufacturing Facility, and (ii) supply Product to Partner pursuant to the provisions of this Article 9, Exhibit C, and the associated MSA. In the event that a Technology Transfer to a Selected Manufacturer occurs, upon its completion, Section 2.1 of this Agreement shall be amended to grant the Selected Manufacturer a non-exclusive, non-sublicensable, fully paid up license under the Atara Intellectual Property existing as of the completion date of the Technology Transfer to Manufacture the Product for all of Partner's authorized uses in the Field and in the Territory under this Agreement. Atara shall have no further obligation to Manufacture and supply Product for any Partner, Partner's Affiliate, or Approved Sublicensee use under this Agreement.

Article 10

Intellectual Property Matters

10.1 Ownership of Atara Intellectual Property. Partner acknowledges that, as between the Parties, Atara Controls the Atara Intellectual Property.

10.2 Prosecution. Partner acknowledges that, as between the Parties, Atara, through MSK, has the sole right, but not the obligation, at its sole cost and expense, to file, prosecute and maintain the Patent Rights in the Territory constituting Atara Intellectual Property. Atara shall keep Partner reasonably informed of the progress of its prosecution efforts, by providing Partner with copies of all material patent prosecution documentation so that Partner may be informed and advise Atara on the continuing prosecution, and Atara agrees to consider in good faith all such reasonable comments. Partner shall keep this documentation confidential. If Atara elects not to file, prosecute or maintain a Patent Right in any country in the Territory, then it shall notify Partner in writing at least [***] before any deadline applicable to the filing, prosecution or maintenance of such Patent Right, as the case may be, or any other date by which an action must be taken to establish or preserve such Patent Right in such country or possession. Upon notification, Partner may elect to assume thereafter the costs of the filing, prosecution, or maintenance of such Patent Right. In such event, Atara shall file, prosecute or maintain such Patent Right. Atara shall reimburse such costs directly incurred with respect to the filing, prosecution, or maintenance of such Patent Right upon receipt of the corresponding invoice from Partner.

10.3 Enforcement in the Territory. Subject to Section 10.3(c) hereto, Partner acknowledges that, as between the Parties, Atara has the sole right, but not the obligation, at its sole cost and expense, to enforce the Atara Intellectual Property in the Territory against Third Party infringement, unauthorized use, misappropriation or threatened infringement thereof. However, Partner shall have the right to join such action as a party plaintiff if admissible by applicable Laws at its own costs and expenses in order to seek compensation for its own damages.

(a) Each Party shall promptly notify the other Party in writing of any existing or threatened infringement, unauthorized use or misappropriation of the Atara Intellectual Property in the Territory by reason of the Manufacture, use or sale of a product identical to or substantially similar to the Product and shall provide all evidence in such Party's possession demonstrating such infringement.

(b) Partner shall provide to Atara reasonable assistance in any enforcement of the Atara Intellectual Property in the Territory against Third Party infringement, at Atara's request, including joining such action as a party plaintiff if required by applicable Laws to pursue such action. Atara shall keep Partner regularly informed of the status and progress of such enforcement efforts, shall reasonably consider Partner's comments on any such enforcement efforts. Partner shall be entitled to separate representation in such matter by counsel of its own choice and at its own expense, but Partner shall at all times cooperate fully with Atara in bringing such action.

(c) If Atara, in its sole discretion, determines not to exercise its right to bring an action against Third Party infringement of the Atara Intellectual Property in the Territory, subject to Memorial Sloan Kettering Cancer Center's secondary right to bring an action against Third Party infringement of the Atara Intellectual Property in the Territory as detailed in the Existing Agreement, Partner shall be entitled to bring such action at its sole cost and expense. Atara shall provide to Partner reasonable assistance in such enforcement, at Partner's request, including joining such action as a party plaintiff if required by applicable Laws to pursue such action. Partner shall keep Atara regularly informed of the status and progress of such enforcement efforts, shall reasonably consider Atara's comments on any such efforts. Atara shall be entitled to separate representation in such matter by counsel of its own choice and at its own expense, but Atara shall at all times cooperate fully with Partner in bringing such action.

(d) A Party with responsibility for enforcement under this Section 10.3 hereto shall not settle any claim, suit or action that it brought under this Section 10.3 involving Atara Intellectual Property without the prior written consent of the other Party, which consent shall not be unreasonably withheld; provided that the other Party shall have the sole discretion to withhold consent in the event that such settlement would (i) restrict in any material respect the scope of the Atara Intellectual Property or its rights or interests therein or otherwise adversely impact the Atara Intellectual Property rights, or (ii) adversely impact the Development, Commercialization, any Regulatory Approval or any Regulatory Exclusivity of the Product, either in the Territory or outside the Territory.

(e) If either Party recovers monetary damages from any Third Party in a suit or action brought hereunder with respect to the Atara Intellectual Property, including in a settlement, such recovery shall be allocated first to the reimbursement of any expenses incurred by the Parties in such litigation (including, for this purpose, a reasonable allocation of expenses of internal counsel), and any remaining amount shall be retained by the Party bringing such suit or action. [***].

10.4 Infringement of Third Party Patent Rights. If a Party becomes the subject of a Third Party's claim or assertion of infringement of a Third Party Patent Right granted by a jurisdiction within the Territory with respect to the Commercialization of the Product in the Field in the Territory, or the Development or Manufacture of the Product in the Field for Commercialization in the Field in the Territory, the Party first having notice of the claim or assertion shall promptly notify the other Party, and thereafter, the Parties shall promptly meet to consider the claim or assertion and mutually agree upon the appropriate course of action, but each of them shall be entitled to defend itself provided that it shall keep the other Party regularly informed of the status and progress of such defense efforts, shall reasonably consider the other Party's comments, and shall not settle any claim, suit or action without the prior written consent

of the other Party, which consent shall not be unreasonably withheld; provided that the other Party shall have the sole discretion to withhold consent in the event that such settlement would impose any obligation or liability on the other Party.

10.5 **Patent Marking**. Partner shall mark Product marketed and sold by Partner (or its Affiliate and their Approved Sublicensees) hereunder with appropriate patent numbers or indicia, where relevant.

Article 11

Payments

11.1 **Upfront Payment.** No later than [***] after the Effective Date, Partner shall pay to Atara an upfront fee of [***] in consideration for the licenses granted hereunder (the "**Upfront Payment**"). The Upfront Payment shall be non-refundable, non-recoupable and non-creditable against any other amounts payable hereunder.

11.2 **Development Milestones .** Partner shall make the following one-time milestone payments to Atara for the milestone events set forth in this Section 11.2:

[***].

11.3 **Commercial Milestones.** Partner shall make the following one-time milestone payments to Atara for the milestone events set forth in this Section 11.3:

[***].

11.4 **Royalties on Net Sales**.

(a) **Full Royalty Term**. From the Effective Date and through the end of the Full Royalty Term, on a country-by-country basis solely with respect to the Full Royalty Term, Partner shall make the following royalty payments to Atara on Net Sales of Product at a rate of: [***].

(b) **Extended Royalty Term**. Following expiration of the Full Royalty Term in a country of the Territory, Partner shall pay to Atara royalties on Net Sales in such country at a rate of [***] until the termination or expiration of this Agreement (the "**Extended Royalty Term**").

11.5 **Third Party Licenses.** In the event that Partner determines in its good faith judgment with advice from independent legal counsel that it is necessary to obtain a license to any Third Party Patent Rights in the Territory, wherein Partner's Commercialization of the Product in the Field in the Territory would infringe such Third Party Patent Rights absent a license thereunder, and Partner obtains a license under such Patent Rights, Partner may deduct from the amounts due to Atara during the Full Royalty Term under Section 11.4(a) an amount equal to [***] of any royalty payments on net sales actually paid to any such Third Party as consideration solely for any such license to such Patent Rights in the Territory; provided, however, that in no event shall the

royalties owed to Atara under Section 11.4(a) be reduced, in the aggregate, by more than [***]. Partner agrees to provide Atara a true, complete and unredacted copy of any license or other agreement subject to this Section 11.5 within [***] of entering into such license agreement.

11.6 Generic Competitor. If during the Full Royalty Term, a Third Party Generic Competitor receives Regulatory Approval, enters the market for sale in the Territory, and (i) achieves a Generic Market Share of at least [***] in any particular Calendar Quarter in any country(ies) of the Territory, in lieu of the royalty rates specified in Section 11.4 hereto, the royalty rate applicable to Net Sales of Product by Partner, its Affiliates, and Approved Sublicensees in such country(ies) in that Calendar Quarter shall be [***], or (ii) achieves a Generic Market Share of greater than [***] in any particular Calendar Quarter in any country(ies) in the Territory, in lieu of the royalty rates specified in Section 11.4 hereto, the royalty rate applicable to Net Sales of Product by Partner, its Affiliates, and Approved Sublicensees in such county(ies) in that Calendar Quarter shall be [***].

11.7 Academic Hospital Manufacturer. If during the Full Royalty Term, on a country-by-country basis in the Territory, a product meeting the requirements of clause (a) and (b) of the defined term "Generic Competitor" is manufactured and sold by an academic hospital in a country in the Territory, Partner shall provide written notice to Atara of the sales of such product in such country and if the Parties mutually agree that the impact of such sales by the academic hospital is material, [***].

11.8 Milestone Reports and Payments.

(a) Atara shall notify Partner (or Partner shall notify Atara, as applicable) in writing within [***] after Atara or Partner first learns of the achievement of each milestone set out in Section 11.2. The corresponding milestone payment by Partner shall be due to Atara within [***] of receipt by Partner of an invoice from Atara and issued no earlier than the notice of achievement of the corresponding milestone event.

(b) Partner shall notify Atara in writing within [***] after Partner first learns of the achievement of each milestone set out in Section 11.3. The corresponding milestone payment by Partner shall be due to Atara within [***] of receipt by Partner of an invoice from Atara and issued no earlier than the notice of achievement of the corresponding milestone event.

(c) All payments due under Sections 11.2, 11.3 and 11.8 shall be payable, in full, in U.S. dollars, and shall be made by wire transfer to the Atara bank account specified in Exhibit E attached hereto, or to such other bank account designated in writing by Atara at least [***] prior to the applicable payment date, which account shall be opened in Atara's name in the book of a bank in the European Union or the United States of America. Atara agrees to provide to Partner all information and documents required by Partner in connection with the relevant provisions of Laws relating to anti-money laundering/KYC and which are sufficient to allow Partner to comply with such Laws.

(d) Any milestone payment made by Partner to Atara pursuant to Article 11 hereto shall be non-refundable, non-creditable, and non-cancellable.

11.9 Royalty Reports and Payments.

(a) **Reports.** Within [***] after the end of each Calendar Quarter, commencing with the Calendar Quarter in which occurs the first invoiceable sale of Product in the Field in the Territory for which royalties are due and payable by Partner, its Affiliates or their Approved Sublicensees, Partner shall deliver to Atara a report (each, a "**Royalty Report**") setting out in compliance with the template attached in Exhibit H all details necessary to calculate the payments due under Section 11.4, including royalty bearing Net Sales and the number of units sold in the relevant Calendar Quarter on a country-by-country basis, all relevant exchange rate conversions in accordance with Section 11.9(b) and the amount of any payment due from Partner to Atara, calculated in accordance with this Article 11. Partner shall provide a preliminary, non-binding, estimated Royalty Report (not including information on the number of units sold) within [***] of the end of each Calendar Quarter. The royalty payment shall be due within [***] date of invoice and issued no earlier than the date of receipt of the Royalty Report by Atara.

(b) **Payments.** All payments due under Sections 11.4 and 11.9 of this Agreement shall be payable, in full, in U.S. dollars, regardless of the country(ies) in which Net Sales are made. For the purposes of computing Net Sales of Products sold in a currency other than U.S. dollars, such currency shall be converted into U.S. dollars using the average quarter to date rate of exchange as consistently applied per Partner's internal accounting and reporting process. Such payments shall be without deduction of exchange, collection or other charges. All payments owed under this Agreement shall be made by wire transfer to the Atara bank account specified in Exhibit E attached hereto, or to such other bank account designated in writing by Atara at least [***] prior to the applicable payment date, which account shall be opened in Atara's name in the book of a bank in the European Union or the United States of America. Atara agrees to provide to Partner all information and documents required by Partner in connection with the relevant Laws relating to anti-money laundering/KYC policies which are sufficient to allow Partner to comply with such Laws.

(c) **Record Retention**. Beginning with the first invoiceable sale of a Product in the Field in the Territory, Partner shall keep complete and accurate records pertaining to the sale of such Products including the original data files used to prepare the submitted Royalty Reports, for a period of [***] after the year in which such sales occurred, and in sufficient detail to permit Atara to confirm the accuracy of the royalties paid by Partner hereunder.

(d) **Late Payments**. In the event that any payment due under this Agreement is not made when due, the payment shall accrue interest from the date due at the rate of [***]; provided, however, that in no event shall such rate exceed the maximum legal annual interest rate. The payment of such interest shall not limit Atara from exercising any other rights it may have as a consequence of the lateness of any payment.

11.10 Audits. During the term of this Agreement and for a period of [***] thereafter, at the request and expense [***], Partner shall permit an independent, certified public accountant of nationally recognized standing appointed by Atara, and reasonably acceptable to Partner, at reasonable times and upon reasonable notice, but in no case no more than once for any particular royalty period, or more than [***] thereafter, to examine such records as may be necessary for the sole purpose of verifying the calculation and reporting of Net Sales and the correctness of any

royalty payment made under this Agreement for any period within the preceding [***]. Results of any such examination shall be made available to both Partner and Atara. The independent, certified public accountant shall disclose to Atara only the royalty amounts which the independent auditor believes to be due and payable hereunder to Atara and shall disclose no other information revealed in such audit. Any and all records examined by such independent accountant shall be deemed Partner's Confidential Information which may not be disclosed by said independent, certified public accountant to any Third Party. Notwithstanding the above, if such audit reveals an underpayment by Partner in excess of [***], then [***] shall pay the reasonable costs of the auditors plus interest on the discrepancy as provided for late payments under Section 11.9(d) within [***] of the completion of the applicable audit.

11.11 Taxes.

(a) **Sales or Other Transfers**. The recipient of any transfer under this Agreement of Product or Know-How, as the case may be, shall be responsible for any sales, use, value added, excise or other taxes applicable to such transfer as required by law.

(b) **Withholding**. If Laws or regulations require withholding by Partner of any taxes imposed upon Atara on account of any royalties or other payments paid under this Agreement, such taxes shall be deducted by Partner as required by Law from such payment and shall be paid by Partner to the proper taxing authorities. Partner shall use Commercially Reasonable Efforts to secure official receipts of payment of any withholding tax and shall send them to Atara as evidence of such payment. The Parties shall exercise their reasonable efforts to ensure that any withholding taxes imposed are reduced as far as possible under the provisions of any applicable tax treaty and shall cooperate in filing any forms required for such reduction. Each Party shall cooperate with the other and furnish the other Party with appropriate documents, including Tax Documentation, to secure application of the most favorable rate of withholding tax under applicable Law (or exemption from such withholding tax payments, as applicable).

11.12 Additional Studies.

(a) In the event that Partner elects to conduct a Clinical Study or other Development activities (excluding Observational Studies) pursuant to Section 6.1 (i) in order to obtain a Marketing Authorization in the Primary Indication in the European Territory or (ii) for any Clinical Study or other Development activities (excluding Observational Studies) upon which the grant of a Marketing Approval is expressly conditioned then, Partner shall be entitled to set off [***].

(b) In the event that Partner elects to solely conduct and fund New Development activities pursuant to Section 6.2(b), and unless otherwise agreed in writing between the Parties, [***].

Article 12

Representations and Warranties; Disclaimer

12.1 **No Representation of Success**. Atara does not warrant that Atara can successfully Develop or obtain Regulatory Approvals for the Product in the Field in the Territory.

12.2 **Representations and Warranties of Atara** . Atara covenants, and represents and warrants to Partner that as of the Effective Date:

(a) Atara is a corporation duly organized, validly existing and in good standing under the laws of the jurisdiction in which it is incorporated, is qualified to do business and is in good standing as a foreign corporation in each jurisdiction in which the conduct of its business or the ownership of its properties requires such qualification and failure to have such would prevent Atara from performing its obligations under this Agreement;

(b) Atara has full right and authority to grant the licenses to Partner as described herein;

(c) The Agreement has been duly authorized by all requisite corporate action, and when executed and delivered will become a valid and binding contract of Atara enforceable against Atara in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium and other Laws affecting creditors' rights generally from time to time if effect, and to general principles of equity;

(d) The execution, delivery and performance of this Agreement does not conflict with any other agreement, contract, instrument or understanding, oral or written, to which Atara is a party, or by which it is bound, nor does it violate any Law applicable to Atara;

(e) All necessary consents, approvals and authorizations of all regulatory and Governmental Authorities and other persons or entities required to be obtained by Atara in connection with the execution and delivery of this Agreement and the performance of its obligations hereunder have been obtained;

(f) The Patent Rights within the Atara Intellectual Property in Europe and the UK, and to Atara's knowledge countries or regions in the Territory other than Europe and the UK, listed on Exhibit D constitute a true, accurate and complete list of all Patent Rights within the Atara Intellectual Property in the Territory in existence as of the Effective Date Controlled by Atara relating to the Products in the Territory;

(g) Atara is the sole and exclusive owner or exclusive licensee (subject to Section 2.1(c) and to routine commercial licenses, and provided that certain Know-How licensed to Atara by MSK under the Existing Agreement is licensed to Atara on a non-exclusive basis) of all of Atara Intellectual Property in the Territory with respect to Product, including all Patents Rights listed on Exhibit D and Product Trademarks listed on Exhibit G, free from encumbrances, and has the right to grant to Partner the rights granted herein with the respect to the Atara Intellectual Property;

(h) To Atara's knowledge, all individuals who participated in the invention of any of the inventions claimed in the Patent Rights within the Atara Intellectual Property have made effective assignments of all ownership rights either pursuant to written agreement or by operation of applicable Law;

(i) To Atara's knowledge, all application and registration fees in respect of the Patent Rights within the Atara Intellectual Property listed on Exhibit D have been paid and all necessary documents and certificates have been filed with the relevant agencies for the purpose of registering such Patent Rights within the Atara Intellectual Property;

(j) All application and registration fees in respect of the Product Trademarks listed on Exhibit G have been paid and all necessary documents and certificates have been filed with the relevant agencies for the purpose of registering such Product Trademarks;

(k) To Atara's knowledge, Atara has not misappropriated any know-how relating to the development, registration or manufacturing of the Product;

(l) There are no actual, pending, alleged, or to Atara's knowledge, threatened actions, suits or claims alleging the misappropriation of any know-how relating to the development, registration or manufacturing of the Product. Atara has taken reasonable precautions to preserve the confidentiality of the Atara Know-How within the Atara Intellectual Property;

(m) Atara has not granted as of the Effective Date any licenses to any Affiliate or Third Party under the Atara Intellectual Property or Regulatory Approvals to be obtained by Atara hereunder which would conflict with the licenses granted to Partner hereunder;

(n) There are no actual, pending, alleged or to Atara's knowledge, threatened action, suits, claims, interference or governmental investigations involving a Product (including with respect to the development or manufacturing of a Product or any Regulatory Approval or MAA related thereto), the Atara Intellectual Property, by or against Atara, or any of its Affiliates or, to Atara's knowledge, other licensees, and to Atara's knowledge, no circumstances that may give rise to any such action, suits, claims or investigation;

(o) Atara has not brought a claim alleging an infringement by a Third Party of any of the Atara Intellectual Property. To Atara's knowledge, no Third Party infringes or misappropriates any of the Atara Intellectual Property;

(p) To Atara's knowledge, none of the issued Patent Rights within the Atara Intellectual Property are invalid or unenforceable;

(q) Atara has disclosed to Partner in writing copies of: (i) any and all material study reports, or synopses of the materials aspects thereof, from Clinical Studies or GLP preclinical studies of the Product in its possession, and (ii) all material filings and correspondence between Atara and its Affiliates and the EMA, relating to clinical or preclinical studies of the Products, and such information and materials are true and accurate in all material respects

(r) no information or materials provided by or on behalf of Atara to Partner including in the data room, when taken together as a whole, contain any untrue or misleading

statement of a material fact or, to Atara's knowledge, omit to state a material fact, in each case, that is likely to have a material adverse impact, on the Regulatory Approvals, Manufacturing and/or Commercialization, in each case, for the Product in the Territory;

(s) All data with respect to Product that (i) is intended to be or was provided to a Regulatory Authority, or (ii) was provided by Atara to Partner, was generated in compliance with applicable Laws in all material respects;

(t) In the course of the development of Product, Atara has not used any employee or consultant who has been debarred by any Regulatory Authority or was the subject of debarment proceedings by a Regulatory Authority, and to Atara's knowledge, no such employees or consultants have been used by any Third Party on behalf of Atara in connection with the development of the Product. All studies conducted by or on behalf of Atara with respect to the Product or Product have been conducted in accordance with applicable Laws by persons with appropriate education, knowledge and experience in all material respects;

(u) The Existing Agreement is in full force and effect in accordance to its terms as disclosed to Atara. No terms of the Existing Agreement material to the rights granted to Partner hereunder have been redacted in the Existing Agreement made available to Partner;

(v) No Third Party has any right of consent, right of first negotiation or similar rights under the Existing Agreement, that could materially interfere with Partner's exercise of its sublicensing rights under this Agreement;

(w) Atara has maintained and, unless otherwise agreed to by Partner, will maintain and keep in full force and effect all material agreements (including the Existing Agreement in accordance with its terms) and filings (including Patent Rights filings) necessary to perform its obligations hereunder. Atara and its Affiliates are in compliance with the Existing Agreement and have performed all material obligations required to be performed by them to date under the Existing Agreement. Neither Atara nor its Affiliates are (with or without the lapse of time or the giving of notice, or both) in material breach in any respect under the Existing Agreement;

(x) Atara has no knowledge of any breach of the representations and warranties given by the parties to Existing Agreement; and

(y) To the extent relating to the Product, Atara shall not agree or consent to any substantive amendment, supplement or other modification to the Existing Agreement or exercise any other right of agreement or consent thereunder, in each case to the extent that such amendment, supplement, modification, exercise or consent would materially and adversely affect Partner's rights under this Agreement, unless Partner shall have consented in writing to the same.

12.3 **Representations and Warranties of Partner**. Partner covenants, and represents and warrants to Atara that as of the Effective Date:

(a) Partner is a corporation duly organized, validly existing and in good standing under the laws of jurisdiction in which it is incorporated and it has full right and authority to enter into this Agreement and to accept the rights and licenses granted as herein described;

(b) This Agreement has been duly authorized by all requisite corporate action, and when executed and delivered will become a valid and binding contract of Partner enforceable against Partner in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium and other Laws affecting creditors' rights generally from time to time if effect, and to general principles of equity;

(c) The execution, delivery and performance of this Agreement does not conflict with any other agreement, contract, instrument or understanding, oral or written, to which Partner is a party, or by which it is bound, nor does it violate any Law applicable to Partner; and

(d) All necessary consents, approvals and authorizations of all regulatory and Governmental authorities and other persons or entities required to be obtained by Partner in connection with the execution and delivery of this Agreement and the performance of its obligations hereunder have been obtained.

12.4 Representations of Both Parties . Partner, with respect to itself and its Affiliates that have been or will be involved in the Development, Regulatory Filing activities and/or Commercialization of the Product in the Territory represents, warrants to Atara that, as of the Effective Date, and Atara represents, warrants to Partner that, as of the Effective Date, to the knowledge of such Parties' compliance department:

(a) neither they or their directors, officers, employees, or any person authorized to act on its behalf have violated any Anti-Corruption Law in the Territory;

(b) neither they nor any person acting on its behalf, has offered, given, authorized, or promised anything of value (as defined by applicable Anti-Corruption Laws), either directly or indirectly, to any person, including to any Public Official or Entity, for the purpose of (i) improperly influencing any official act or decision; (ii) inducing performance or non-performance of any act in violation of a lawful duty; or (iii) securing an improper benefit or business advantage, in each case ((i) – (iii)) in any manner that violates the applicable Anti-Corruption Laws in the Territory;

(c) they have not received any written notice, request, or citation from any Governmental Authority with respect to any alleged or suspected violation of Anti-Corruption Laws in the Territory; and

(d) they are not under investigation or being prosecuted by a Government Authority with respect to any alleged or suspected violation of Anti-Corruption Laws in the Territory.

12.5 Certain Rights and Obligations of Atara.

(a) Atara shall not during the term of this Agreement (i) grant any lien, pledge, encumbrance, mortgage, or security interest (excluding any license rights or equivalents thereof) (collectively "**Liens**") with respect to this Agreement or any of the Patents Rights within the Atara Intellectual Property in the Territory or (ii) permit such a Lien, to attach to this Agreement or any of such rights, in each case if such Lien would conflict with the rights granted to Partner hereunder.

(b) Upon termination of the Existing Agreement, for the benefit of Partner and should Partner so elect, Atara shall assign to MSK the portion of the Agreement that relates to the Existing Agreement and shall use Commercially Reasonable Efforts to pursue enforcement of Section 17.5 of the Existing Agreement;

(c) To the extent relating to the Product in the Territory, Atara shall not agree or consent to any substantive amendment, supplement or other modification to the Existing Agreement or exercise any other right of agreement or consent thereunder, in each case to the extent that such amendment, supplement, modification, exercise or consent could materially and adversely affect Partner's rights under this Agreement, unless Partner shall have consented in writing to the same, which consent may not be unreasonably withheld, conditioned or delayed (and which agreement or consent of Partner shall be provided within [***] after a request therefor if such amendment, supplement or other modification would not materially and adversely affect Partner's rights under this Agreement).

(d) Atara shall not terminate the Existing Agreement without the prior written consent of Partner, which consent may not be unreasonably withheld, conditioned or delayed.

(e) Atara shall at all times comply with the terms of the Existing Agreement. Atara shall promptly notify Partner of any actual or threatened breach of the Existing Agreement of which Atara becomes aware. Without limiting the foregoing, within [***] after Atara's receipt of any written notice, or otherwise becoming aware that such a notice may be forthcoming, relating to any alleged breach by Atara under such Existing Agreement, Atara shall notify Partner thereof, specifying the basis for the alleged breach, as set out in the notice or otherwise known to Atara. Without prejudice to any of Partner's other rights under the Agreement or other remedies available to it, Partner shall have the right to take step to cure an actual breach of the Existing Agreement or prevent a termination of the Existing Agreement, at Atara's costs. Partner may set off any reasonable payments made by or on behalf of Partner in connection with the performance of such steps against any amounts payable by Partner to Atara under this Agreement.

12.6 Certain Rights and Obligations of Partner.

(a) Partner's, and Partner's Affiliates, employees, officers, contractors, and consultants performing activities in connection with this Agreement shall execute or have executed agreements requiring assignment to Partner or Partner's Affiliate, as applicable, all right, title and interest in and to their inventions and discoveries invented or otherwise discovered or generated during the course of and as a result of such activities, whether or not patentable, if any, prior to commencing such activities;

(b) Partner currently has, and will maintain during the Term of this Agreement, directly or through its Affiliates, Approved Sublicensees, and Distributors (i) sufficient qualified and trained personnel and resources, and (ii) necessary financial and technical capacity to effectively fulfill its obligations related to the Product as contemplated in this Agreement.

12.7 No Other Warranties. EXCEPT AS EXPRESSLY STATED IN THIS Article 12, (A) NO REPRESENTATION, CONDITION OR WARRANTY WHATSOEVER IS MADE OR GIVEN BY OR ON BEHALF OF PARTNER OR ATARA; (B) ALL OTHER CONDITIONS

AND WARRANTIES WHETHER ARISING BY OPERATION OF LAW OR OTHERWISE ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING ANY CONDITIONS AND WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT; AND (C) ALL KNOW-HOW, INFORMATION AND MATERIALS PROVIDED BY EITHER PARTY TO THE OTHER PARTY UNDER THIS AGREEMENT ARE PROVIDED "AS-IS."

Article 13

Indemnification; Insurance; Disclaimer

13.1 **Indemnification by Atara** . Subject to Section 13.3, Atara shall indemnify, defend and hold harmless Partner and its Affiliates, their subcontractors and Approved Sublicensees and its and their shareholders, directors, officers, employees, agents and representatives and insurers (the "**Partner Indemnified Persons**") from and against all Claims that may arise directly or indirectly as a result of: (i) the fraud, gross negligence or willful or wrongful acts or omissions of Atara; (ii) a breach by Atara of any of its representations or warranties under this Agreement; (iii) the failure of Atara to comply with applicable Laws; or (iv) Atara's Development, Manufacture (provided that such indemnity will be placed in the MSA when entered into), Cell Selection services and Commercialization of the Products by or on behalf of Atara, in each case, except to the extent such Claim arises directly or indirectly as a result of any of the matters for which Partner is providing indemnification pursuant to Section 13.2.

13.2 **Indemnification by Partner.** Subject to Section 13.3, Partner shall indemnify, defend and hold harmless Atara and its Affiliates and their subcontractors and its and their shareholders, directors, officers, employees, agents and representatives and insurers (the "**Atara Indemnified Persons**") from and against all Claims that may arise directly or indirectly as a result of: (i) the fraud, gross negligence or willful or wrongful acts or omissions of Partner; (ii) a breach by Partner of any of its representations or warranties under this Agreement; (iii) the failure of Partner to comply with applicable Laws; or (iv) Partner's Development, as applicable, Manufacture, if and when transferred to Partner pursuant to this Agreement, and Commercialization of the Products by or on behalf of Partner, in each case, except to the extent such Claim arises directly or indirectly as a result of any of the matters for which Atara is providing indemnification pursuant to Section 13.1.

13.3 **Notice of Claim.** If a Party intends to claim indemnification under this Agreement (the "**Indemnitee**"), it shall promptly notify the other Party (the "**Indemnitor**") in writing of such alleged loss and the Third Party Claim. The Indemnitor shall have the right to control the defense thereof with counsel of its choice as long as such counsel is reasonably acceptable to Indemnitee. Any Indemnitee shall have the right to retain its own counsel at its own expense for any reason in connection with such Third Party Claim, provided, however, that if the Indemnitee shall have reasonably concluded, based upon a written opinion from outside legal counsel, that there is a conflict of interest between the Indemnitor and the Indemnitee in the defense of such action, the Indemnitor shall pay the fees and expenses of one law firm serving as counsel for the Indemnitee in relation to such Third Party Claim. The Indemnitee, its employees and agents, shall reasonably cooperate with the Indemnitor and its legal representatives in the investigation of any Third Party Claims covered by this Agreement. The obligations of this Article 13 shall not apply to any

settlement of any Third Party Claims if such settlement is affected without the consent of both Parties, which shall not be unreasonably withheld or delayed. Each Party will not, without the prior written consent of the other Party, settle such Third Party Claim or consent to the entry of any judgment to the extent that such settlement or judgment: (i) does not release the other Party from all liability with respect to such Third Party Claim, or (ii) likely will materially adversely affect such other Party or cause such other Party to incur any material obligation or liability. The failure to deliver written notice to the Indemnitor within a reasonable time after the commencement of any such action, to the extent prejudicial to its ability to defend such action, shall relieve the Indemnitor of any obligation to the Indemnitee under this Section 13.3. It is understood that only Partner and Atara can claim indemnity under this Agreement (on its own behalf or on behalf of its Indemnitees), and other Indemnitees may not directly claim indemnity hereunder.

13.4 **Insurance.** Each Party, at its own cost and expense shall, [***], carry and keep in force liability insurance covering such risks as are appropriate and in accordance with sound business practice and the Parties' obligations under this Agreement.

13.5 **Limitation of Liability.** NEITHER PARTY HERETO WILL BE LIABLE FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES, INCLUDING LOST PROFITS, ARISING FROM OR RELATING TO THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES, EXCEPT IN RESPECT OF ANY BREACH OF (1) A PARTY UNDER Article 14 OR (2) INDEMNIFICATION OBLIGATIONS UNDER THIS Article 13 FOR THIRD PARTY CLAIMS. FOR THE AVOIDANCE OF DOUBT, NOTHING IN THIS CLAUSE SHALL LIMIT OR EXCLUDE ANY LIABILITY TO A THIRD PARTY FOR FRAUD BY ANY PARTY.

Article 14

Confidentiality; Publications; Data Protection

14.1 **Confidential Information.** The Parties acknowledge that the Confidential Information include valuable trade secrets and is proprietary and the exclusive property of the disclosing Party and its Affiliates. Unless otherwise set forth in an Ancillary Agreement, during the Term and for a period of [***] thereafter, the receiving Party shall hold the Confidential Information supplied by the disclosing Party hereunder in strict confidence and shall use such Confidential Information solely for the purposes of performing hereunder. Notwithstanding the foregoing, trade secrets shall be treated as Confidential Information for as long as they retain their status as trade secrets. The receiving Party may only disclose Confidential Information to those directors, officers, employees, attorneys, contractors, agents, potential acquiror's, potential sublicensees, bankers, and Affiliates (each a "**Representative**") who have a need to know and who are bound by obligations of confidentiality and non-use with respect to such Confidential Information that are at least as restrictive as those set forth herein. Each of the Parties agrees to: (a) advise their Representatives of the proprietary nature of the Confidential Information and the terms and conditions of this Agreement requiring that the confidentiality of such information be maintained; and (b) use reasonable safeguards to prevent unauthorized use by such Representatives. Each Party shall be responsible for any breach of this Agreement by its respective Representatives.

14.2 **Agreement Confidentiality.** Neither Party hereto shall disclose the terms of this Agreement to any other person or entity other than such Party's Representatives, or as may otherwise be required by applicable Laws. In the event a Party reasonably believes it is required by applicable Laws to disclose any terms of this Agreement, prior to any proposed disclosure of any of the terms of this Agreement, such Party shall allow and reasonably assist the other Party in taking any action to lawfully prevent or limit any such disclosure.

14.3 **Exceptions**. For the purposes of this Agreement, "**Confidential Information**" shall not include:

(a) Confidential Information which is or becomes public knowledge (through no fault of the Parties or their Representatives in violation hereof);

(b) Confidential Information which is lawfully made available to a Party by an independent third party (and such lawful availability can be properly demonstrated);

(c) Confidential Information which is already in a Party's possession at the time of initial receipt from the other Party (and such prior possession can be demonstrated by competent evidence); or

(d) Confidential Information which is independently developed by a Party or its Representatives and such independent development can be demonstrated by competent evidence.

14.4 **Disclosures Required by Applicable Law**. Either Party may disclose Confidential Information which is required to be disclosed by applicable Laws or order of any Government Authority to be disclosed; provided, however, that the Party so disclosing shall, give the other Party as much prior written notice as reasonably practicable to permit it to seek a protective order or other similar order with respect to the Confidential Information and, thereafter, shall disclose only the minimum Confidential Information required to be disclosed in order to comply, whether or not the other Party seeks or obtains any such protective or other similar order. Notwithstanding the foregoing, information disclosed as set forth in this Section 14.4 shall not be disclosed to any other Third Party without the prior written consent of the disclosing Party.

14.5 **Injunctive Relief**. Each Party acknowledges and agrees that its breach of the confidentiality and non-use obligations set forth herein may cause irreparable harm to the disclosing Party which would not be fully compensable by payment of money damages alone, and that in the event of such a breach or threatened breach the disclosing Party shall be entitled to seek equitable relief (including, without limitation, injunctive relief), without the necessity of proving actual damages or posting a bond. Such equitable relief shall be in addition to and not in lieu of any other relief available to the disclosing party at law or in equity.

14.6 **Ownership of Confidential Information**. All Confidential Information which either Party or any of its Representatives shall obtain or to which either Party or any such Representative shall be given access pursuant to or in connection with this Agreement, shall be and remain the sole property of the disclosing Party, and the receiving Party shall have no rights or interests (except as expressly provided herein) to or in such Confidential Information.

14.7 **Return or Destruction of Confidential Information**. Immediately upon the expiration or earlier termination of this Agreement, the receiving Party shall, at the other Party's option, return to the disclosing Party, or provide a certificate of one of its Executive Officers as to the destruction of all Confidential Information (including all copies thereof) then in the possession of the receiving Party or any of its Representatives. Each Party may retain one (1) archival copy of such Confidential Information, which Confidential Information shall be subject to the confidentiality obligations set forth in this Article 14.

14.8 **Data Protection**. Each Party shall comply with their respective obligations under applicable Data Protection Laws. Where one Party discloses personal data to the respective other Party, the disclosing Party is responsible to ensure meeting all conditions that are legally required to allow this disclosure for purposes of this Agreement (including medical and diagnostic research and development purposes). If such disclosure may include transfer of personal data from the European Economic Area (EEA) to a non-adequate country as defined by the General Data Protection Regulation 2016/679 (GDPR) such a transfer will require the prior conclusion of a specific agreement between the Parties, which they expressly accept, providing for the implementation of the most appropriate transfer mechanism in order to comply with the provisions of the GDPR related to export of personal data outside EEA. Additionally, this disclosure may include, e.g., ensuring that respective Data Subjects have given and not withdrawn their consents, or anonymizing or de-identifying the human personal data prior to disclosure.

14.9 **Publications**.

(a) Atara shall have the right to publish any information, data, or results obtained by Atara independently of this Agreement with respect to the Product in written, oral or other form and in any forum, provided that it shall provide prior notice to Partner with respect to any new Development Data that it intends to publish.

(b) If either Party (the "**Publishing Party**") wishes to publish any information, data or results regarding the Product in the Field in the Territory obtained from activities authorized under this Agreement, including any Development Data resulting from the Current Studies in any scientific journals or scientific conferences, a manuscript of the proposed publication shall first be sent to the other Party (the "**Receiving Party**") at least [***] in advance of such publication for review. The Publishing Party shall consider in good faith the Receiving Party's comments during this [***] period and unless the Receiving Party informs the Publishing Party in writing during this [***] period that the proposed publication must be delayed in order to protect a patentable invention or changed to avoid disclosure of the Receiving Party's Confidential Information or adjusted (to the extent scientifically reasonable) to avoid any materially adverse impact on the Development or Commercialization of the Product, the Publishing Party shall be free to publish such results. In the event that a delay of the proposed publication is required, the Publishing Party shall withhold such submission for publication for one additional period, up to [***], or such other period as the Parties may mutually agree.

(c) If a Party intends to present any information, data or results regarding activities relating to the Product in the Field in the Territory, including any Development Data resulting from the Current Studies, at symposia or other meetings of healthcare professionals, or international and/or US or European congresses, conferences or meetings organized by a

professional society or organization, the provision of subclause (b) shall apply *mutatis mutandis* to (i) all abstracts that will be submitted for publication (ii) all draft slide presentations for use in oral presentations, and (iii) all posters that will be presented at such Scientific Meeting, provided that the [***] review period referred to in subclause (b) shall be reduced to [***].

14.10 **Publicity**. The Parties shall agree on a joint press release in relation to the execution of this Agreement, following the public dissemination of which (i) either Party may make subsequent public disclosure of the contents of such statement, in a manner reasonably consistent with such contents, without the further approval of the other Party, and (ii) each Party shall be entitled to refer publicly to the relationship of the Parties reflected in this Agreement in a manner that is consistent with the joint press release issued by the parties. All other publicity, press releases and other announcements relating to this Agreement or the transactions contemplated hereby, including any announcement that discloses the existence of this Agreement or any Development or Commercialization activities with respect to the Product in the Field and in the Territory, shall be reviewed in advance by and subject to the approval of both Parties, which approval shall not be unreasonably withheld; except that:

(a) nothing in this Section 14.10 shall prevent a Party from promptly making all disclosures and filings with Government Authorities as may, in its judgement be required or advisable in connection with the execution and delivery of this Agreement or the consummation of and the performance thereof the transactions contemplated hereby, including, without limitation, disclosures required by the rules and regulations of the SEC, other Government Authority, or applicable stock exchange, provided that except where prohibited by applicable Law or exigent circumstances, the receiving Party takes reasonable best efforts to provide the disclosing Party at least [***] prior written notice of such disclosure (and the right to review and comment on the proposed disclosure), and discloses only that portion of the Confidential Information that the receiving Party is legally required to disclose in the receiving Party's legal counsel opinion;

(b) to the extent that this Agreement and one or more of the Ancillary Agreements may need to be filed by Atara with the SEC, Atara shall, prior to making any such filing with the SEC, provide Partner and its counsel with a proposed redacted version of this Agreement (and any other Ancillary Agreement, as applicable) which it intends to file with the SEC and to give due consideration to any comments provided by Partner or its counsel and use reasonable efforts to obtain confidential treatment for such required disclosure;

(c) following the filing of the Agreement or any Ancillary Agreement with the SEC, Atara may describe or refer to portions of the Agreement or any Ancillary Agreement for which confidential treatment is not obtained from the SEC without the prior review or approval of Partner;

(d) Atara may, only as required by the rules and regulations of the SEC or applicable stock exchange, disclose the Net Sales set forth in any Royalty Report in any earnings release, quarterly report or annual report, as the case may be, in each case without the prior review or consent of Partner; and

(e) either Party shall be free, without the consent of the other Party, to continue to publicly disclose materials previously approved by the other Party to the extent such materials are substantially in the same form as previously approved.

Article 15

Subcontracting

15.1 Atara. Subject to the terms and conditions of this Agreement, including, without limitation, Section 15.3 hereto, Atara shall have the right to carry out all or any part of its obligations under this Agreement or any Ancillary Agreement through its subsidiaries, Affiliates or one or more Third Party subcontractors, with prior notice to the JSC with respect to the primary CRO responsible for operating the Clinical Studies and prior approval of the JSC with respect to Manufacturing entities other than the Atara Manufacturing Facilities.

15.2 Partner. Subject to the terms and conditions of the Agreement, including, without limitation, Section 15.3 hereto, Partner shall have the right to carry out all or any part of its obligations under this Agreement or any Ancillary Agreement through (i) its Affiliates and Approved Sublicensees, and Distributors, or (ii) one or more Third Party subcontractor(s) that do not require a license under the Atara Intellectual Property to perform appointed activities under this Agreement.

15.3 Responsibility For Subcontractors. Each Party shall ensure that each of its subcontractors or Approved Sublicensees (as applicable), if any, accepts and complies with all of the terms and conditions of this Agreement and such Party shall be responsible for all acts of such subcontractors or Approved Sublicensees as if such acts were its own.

Article 16

Term and Termination

16.1 Term. This Agreement will commence on the Effective Date and, unless earlier terminated under this Article 16 shall expire following the last Commercial Sale of the Product in the Field in the Territory by Partner, its Affiliates or their Approved Sublicensees (the "**Term**").

16.2 Termination for Material Breach, Transfer or Assignment, Insolvency Event.

(a) Either Party may terminate this Agreement in the event of a material breach by the other Party of any material obligation of this Agreement in the overall context of the Agreement on [***] prior written notice to the other, specifying the nature of the breach, unless such other Party shall (i) cure such default within such [***] period or, (ii) if not capable of being remedied within such [***] period, communicate to the non-breaching Party a written remediation plan reasonably designed to cure such breach or default within a reasonable additional time period, not to exceed an additional [***] following expiration of the foregoing [***] period and diligently seeks to remedy the breach in accordance with the remediation plan. If the allegedly breaching Party disputes in good faith the material breach, this Agreement shall not be terminable by the non-breaching Party until it has been determined by arbitration under Section 17.10(c) that this

Agreement was materially breached by the breaching Party and then only if the breaching Party has not cured such material breach within [***] following such arbitration determination. If the material breach is due to an Approved Sublicensee or Distributor of Partner, the termination of the license or sublicense with such Approved Sublicensee or Distributor within [***] of the notice of breach would be deemed to cure such breach for the purposes of this Section 16.2(a).

(b) Notwithstanding the provisions of Section 16.2(a), either Party may terminate this Agreement on written notice with immediate effect upon the Insolvency Event of the other Party. All licenses granted under this Agreement are deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of right to intellectual property as defined in Section 101 of such Code. The Parties agree that Partner may fully exercise all of its rights and elections under the U.S. Bankruptcy Code and any foreign equivalent thereto in any country having jurisdiction over a Party or its assets. The Parties further agree that, in the event Partner elects to retain its rights as a licensee under such Code, Partner shall be entitled to complete access to any Licensed Intellectual Property and all embodiments of such technology.

16.3 Termination for Patent Challenge. If Partner commences or actively participates in any action or proceeding (including any patent opposition or re-examination proceeding), or otherwise asserts in writing any claim challenging or denying the validity or enforceability of any patent claim in the Atara Intellectual Property, then Atara shall have the right, in its sole discretion, to terminate this Agreement upon providing Partner [***] prior written notice of termination. In addition to all other rights and remedies available to Atara for any breach of this provision by Partner, in the event that any such challenge is not successful, then Partner shall reimburse Atara for all costs and expenses, including but limited to attorney's fees, incurred by Atara incurred as a result of defending against such challenge.

16.4 Termination for Convenience by Partner. Partner shall be permitted to terminate this Agreement at will (a) in [***], or (b) on a country-by-country basis outside the [***] with [***] prior written notice to Atara in the Pre-Transfer Period and [***] prior written notice to Atara in the Post-Transfer Period. During the period after providing Atara a notice to terminate pursuant to this Section 16.4 and prior to the effective date thereof, this Agreement will remain in full force and effect with respect to such terminated country(ies) and Partner shall continue (and shall cause all its Affiliates, Approved Sublicensees and Distributors to continue) to perform Partner's obligations and applicable activities under this Agreement in such country(ies).

16.5 Termination by Mutual Agreement. In the event that by [***], (a) no Marketing Authorization has been obtained for the Product in the European Territory and (b) there is no ongoing Development for a Product for Commercialization in the Field in the Territory, the Parties shall discuss in good faith the terms and conditions under which the Agreement may be terminated by their mutual agreement.

16.6 Termination for Safety Reasons. Partner shall be permitted to terminate the Agreement for Safety Reasons upon [***] written notice to Atara, but only after consulting with Atara at least [***] on Partner's assessment with respect to such Safety Reasons. In this regard, "**Safety Reasons**" shall mean that, based upon all relevant scientific data, there are safety and public health issues relating to the Product such that the medical benefit/risk ratio of such Product

is sufficiently unfavorable as to materially compromise the welfare of patients so that use in patients is no longer justifiable

16.7 Alternative to Termination for Material Breach. If Atara has materially breached or defaulted in the performance of any of its material obligations hereunder with respect to Regulatory Filings and Regulatory Interactions during the Pre-Transfer Period, and Manufacturing and Cell Selection services during the Term, or of its obligations in Sections 8.13 and 8.14, and such breach is not curable or has not been cured within the cure period in Section 16.2 after written notice thereof was provided by Partner, then, [***].

16.8 Consequences of Termination.

(a) **Accrued Obligations**. The termination of this Agreement by either Party shall not release the other Party from any liability which, at the time of such termination, has already accrued to the other Party or which is attributable to a period prior to such termination, nor will any such termination of this Agreement preclude either Party from pursuing all rights and remedies it may have under this Agreement, or at law or in equity, with respect to breach of this Agreement, provided that any milestone payment that is achieved under Article 11.2(b) and (c) during the termination notice period shall not be due.

(b) **Rights on Termination of Agreement**. In case of termination of this Agreement by either Party (unless as otherwise specified), this Section 16.8(b) shall apply:

(i) Wind-down Period.

(1) Partner shall use Commercially Reasonable Efforts to effect a smooth termination of the Agreement, including by performing the activities set forth in Sections 16.8(b)(i)(3), (4) and (5), for a period not exceeding [***] following the termination of the Agreement ("**Transition Period**").

(2) Partner shall return to Atara, [***], in resalable form its remaining inventory of the Product in the Territory following the termination of this Agreement during the Transition Period.

(3) In the event Partner is the sponsor of or is responsible for conducting any on-going Clinical Studies of the Product following the date a notice of termination has been issued by Atara or Partner, as applicable, Partner shall be entitled to complete or wind down such activities, unless Atara requests that they be transitioned to Atara, in which case Partner shall use Commercially Reasonable Efforts to support such transition to Atara, [***].

(4) Each Party shall use Commercially Reasonable Efforts to cooperate with the other to effect a smooth and orderly wind down or transition in of the activities related to the Product in the Territory during the Transition Period.

(5) Partner shall provide Atara with country-specific Promotional Materials for use limited to the Product, excluding any trademarks and logos that are specific to Partner. Partner agrees to provide Atara with country-specific Promotional Materials and to assign on reasonable commercial terms to be agreed by the Parties all worldwide rights in

and to any Product Trademarks, other than Product Trademarks of Atara, specific to the Product that Partner or any of its Affiliates used in connection with Product(s). It is understood that such assignment shall not include the name of Partner or any of its Affiliates, nor the corporate logo, service mark, or trademark for Partner or for any of its Affiliates as a corporate entity.

(ii) Licenses. Upon termination of this Agreement in all or part by either Party, subject to the provisions of Section 16.8(b)(i), all licenses granted by Atara to Partner, including any license to Manufacture Product in the Territory or use Atara trademarks and associated web domains, shall terminate, and Partner and its Affiliates and Approved Sublicensees shall cease all Commercialization activities under this Agreement, in each case, with respect to the terminated countries. Further, the following provisions shall apply to the terminated countries of the Territory:

(1) Assignment of Regulatory Filings and Market Authorizations . Partner shall assign, or cause to be assigned) to Atara any and all Regulatory Filings and Market Authorizations held in Partner's name and relating to Product (or to the extent not so assignable, Partner shall take all reasonable actions to make available to Atara the benefits of) all Regulatory Filings and Market Authorizations for the Product in the terminated countries. In each case, unless otherwise required by any applicable Law or regulation or requested by Atara, the foregoing assignment (or availability) shall be made within a reasonable period of time mutually agreed between the Parties.

(2) Approved Sublicensees. Any contracts with Approved Sublicensees in the terminated countries engaged by Partner shall be assigned to Atara to the furthest extent possible. Partner shall use Commercially Reasonable Efforts, and cause its Affiliates to use Commercially Reasonably Efforts, to waive any exclusive dealing obligations of such Approved Sublicensee with respect to such Approved Sublicensee agreement, and to provide to Atara information relevant to the Approved Sublicensee agreement and make introductions to such Approved Sublicensee so that Atara may enter into direct discussions with such Approved Sublicensee to secure the relevant items or services.

(3) Partner Trademarks. Upon the effective date of termination, Partner agrees to assign on reasonable commercial terms to be agreed by the Parties all rights in and to any trademarks owned by Partner that are specific to the Product that Partner, its Affiliates, and Approved Sublicensees used in connection with the Product in terminated countries. It is understood that such assignment shall not include the name of Partner or any of its Affiliates or Approved Sublicensees, nor the corporate logo, service mark, or trademark for Partner or for any of its Affiliates or Approved Sublicensees as a corporate entity.

(4) Partner Intellectual Property. Partner shall and hereby does grant to Atara a non-exclusive, worldwide, transferable, perpetual and irrevocable license, with the right to sublicense through multiple tiers Partner Intellectual Property as it exists at the time of such termination of this Agreement and that are necessary to Develop, Manufacture, Commercialize and otherwise use the Product in the Field in terminated countries, and solely to Develop, Manufacture, Commercialize and otherwise use the Product in the Field in terminated countries subject to Atara's making the payment set forth in Section 11.12; provided however, that

if termination is due to a material breach by Partner under Section 16.2(a), then the foregoing license shall be provided on a fully paid basis.

16.9 Termination Not Sole Remedy. Termination is not the sole remedy under this Agreement and, whether or not termination is affected and notwithstanding any provision contained in this Agreement to the contrary, all other remedies will remain available except as agreed to otherwise herein.

Article 17

General Provisions

17.1 Entire Agreement. This Agreement and the Additional Agreements, together with the Exhibits and all written amendments, modifications and supplements thereto constitute the entire agreement between the Parties and all prior negotiations, proposals and writings pertaining to this Agreement or the subject matter thereof, are hereby superseded. No modification of this Agreement will be effective unless in writing and signed by both Parties.

17.2 Severability. In the event that any provision of the Agreement or the documents and instruments contemplated hereby is held by court of competent jurisdiction to be invalid, prohibited or unenforceable for any reason, unless narrowed by construction, the Agreement and the documents and instruments contemplated hereby shall be construed as if such invalid, prohibited or unenforceable provision had been more narrowly drawn so as not to be invalid, prohibited or unenforceable, or if such language cannot be drawn narrowly enough to satisfy such court, the court making any such determination shall have the power to modify in scope, duration or otherwise any such provision, but only to the extent necessary to make such provision or provisions enforceable in such court, and such provision then shall be applicable in such modified form. No narrowed construction, court modification, or invalidation of any provision of the Agreement and the documents and instruments contemplated hereby shall affect the construction, validity, or enforceability of such provision or of the Agreement and the documents and instruments contemplated hereby in any jurisdiction other than that upon which the decision of the court of competent jurisdiction shall govern.

17.3 Assignment. This Agreement may not be assigned by either to any person, firm, partnership, corporation or other entity (including by operation of law, judicial process or otherwise) without the prior written consent of the other Party, which consent shall not be unreasonably withheld, conditioned or delayed, provided that each Party may assign this Agreement, or any or all of the rights and obligations hereunder, to upon [***] written notice (a) without obtaining the other Party's prior written consent, to any of its Affiliates for as long as such entity remains an Affiliate, (b) in the case of Atara, without obtaining the Partner's prior written consent, to (i) an entity that acquires all or substantially all of the equity interests, business or assets to which this Agreement relates, whether by merger, acquisition, reorganization or otherwise, or (ii) to an entity located in the USA, European Union or United Kingdom solely with respect to the transfer or assignment of rights to receive payments (or any portion thereof) due to Atara under Sections 11.2, 11.3 and 11.4 (and subject to set off rights as applicable), provided that, in connection with such a transfer or assignment, Atara may disclose to the transferee or assignee any reports or information provided to Atara regarding such payments under a written agreement

containing non-disclosure and non-use provisions no less stringent than set forth in this Agreement, and *provided further* that if Partner reasonably believes the assignment in (ii) would materially and adversely affect Partner's ability to perform its obligations under this Agreement, the Partner shall be entitled to refuse such assignment; and (c) in the case of Partner, without obtaining Atara's prior written consent, to an entity that acquires all or substantially all of the equity interests, business or assets of Partner or Partner's commercial franchise within Partner's organization in which the Product is operated, whether by merger, acquisition, reorganization or otherwise. This Agreement shall be binding upon the successors and permitted assigns of the Parties and the name of a Party appearing herein shall be deemed to include the names of its successors and assigns. Any assignment not in accordance with this Section 17.3 shall be null and void.

17.4 **Counterparts**. This Agreement may be executed in any number of counterparts and by each of the Parties in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Signatures of the Parties transmitted by electronic means shall be deemed to be their original signatures for all purposes.

17.5 **Third Party Beneficiaries**. Memorial Sloan Kettering Cancer Center is a Third Party beneficiary of this Agreement solely to the extent required in the Existing Agreement. Otherwise, this Agreement and each and every provision hereof and thereof are for the exclusive benefit of the Parties hereto and not for the benefit of any other third party.

17.6 **Force Majeure**. If the performance of any part of this Agreement (except for any payment obligation under this Agreement) by either Party is prevented, restricted, interfered with or delayed by reason of any cause beyond the reasonable control of such Party (including, fire, flood, earthquake, tsunami, embargo, power shortage or failure, acts of war, pandemic, insurrection, riot, terrorism, strike, lockout or other labor disturbance, acts of God or any acts, omissions or delays in acting of the other Party), the Party so affected shall, upon giving written notice to the other Party, be excused from such performance to the extent of such prevention, restriction, interference or delay; provided that the affected Party shall use its reasonable efforts to avoid or remove such causes of non-performance and shall continue performance with the utmost dispatch whenever such causes are removed.

17.7 **Applicable Law**. The Parties agree to conduct all activities under this Agreement in compliance with applicable Law. This Agreement will be governed by and in accordance with [***] without giving effect to any choice of law principles that would require the application of the laws of a different jurisdiction.

17.8 **Waiver**. Neither Party's failure to insist on performance of any term, condition, or instruction nor failure to exercise any right or privilege or its waiver of any breach, shall thereafter be construed to constitute a waiver of such term, condition, instruction, right or privilege. No consent or waiver, expressed or implied, by a Party to the performance by the other Party or of any breach or default by the other Party of its obligations hereunder shall be deemed or construed to be a consent or waiver to or of any other breach or default in the performance by such other Party of the same or any other obligations of such other Party hereunder. The giving of consent by a Party in any one instance shall not limit or waive the necessity to obtain such Party's consent in

any future instance. No waiver of any rights under this Agreement shall be binding unless it is in writing and signed by the Party waiving such rights.

17.9 **Notices**. Unless otherwise agreed by the Parties or specified in this Agreement, all communications between the Parties relating to, and all written documentation to be prepared and provided under, this Agreement shall be in the English language. Any notice required or permitted under this Agreement shall be in writing in the English language, and (a) delivered personally, (b) sent by air mail or express courier service providing evidence of receipt, postage pre-paid where applicable, or (c) by electronic transmission or facsimile (complete transmission confirmed and a copy promptly sent by another permissible method of providing notice described in paragraph (a) or (b) above), to the following addresses of the Parties (or such other address for a Party as may be specified by like notice):

To Atara:

[***]

To Partner:

[***]

17.10 **Dispute Resolution**.

(a) **Referral to Senior Executives**. The Parties recognize that a dispute arising out of or in connection with this Agreement ("**Dispute**") may from time to time arise during the term of this Agreement. Any such Dispute which cannot be resolved by good faith negotiations shall be referred, by written notice from either Party to the other, to the Executive Officers (or their respective designees) for resolution. The Executive Officers (or their respective designees) shall negotiate in good faith to resolve such Dispute through discussions promptly following such written notice. If the Executive Officers cannot resolve the Dispute within [***] of such written notice, or either Party concludes that the matter will not be so resolved, then, the provisions of Section 17.10(b) shall apply. If the Parties should resolve such Dispute pursuant to the procedures in this Section 17.10(a), a memorandum setting forth their agreement will be prepared and signed by both Parties, if requested by either Party.

(b) **Mediation**. If the Executive Officers (or their respective designees) cannot resolve the Dispute during the [***] period pursuant to Section 17.10(a), the Parties shall first refer the dispute to proceedings under the ICC Mediation Rules. Such mediation shall take place in [***] and shall be attended on behalf of each Party for at least one session by a senior businessperson with authority to resolve the Dispute.

(c) **Arbitration**. Any Dispute not resolved under the procedures in Section 17.10(b) within [***] following the filing of a request for mediation or within such other period as the parties may agree in writing, such Dispute shall thereafter be finally settled under the Rules of Arbitration of the International Chamber of Commerce by three (3) arbitrators, and the President

of the Tribunal shall be nominated according to such Rules of Arbitration of the International Chamber of Commerce. The seat, or legal place, of arbitration shall be Paris, France. The language of the arbitration shall be English. The final award shall be rendered within [***] of the constitution of the tribunal, unless the tribunal determines that the interest of justice requires that such limit be extended. Except as may be required to confirm or enforce a final award, or as may be required by applicable Law, neither a Party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both Parties.

(d) **Non-Disclosure of Communications with Internal Counsel**. Notwithstanding any rights to the contrary under applicable procedural or substantive rules of Law, any communications exchanged between members of each Party's respective legal department and directors, employees or agents in connection with any disputes, investigations, administrative or other proceedings, shall not be requested, produced or otherwise used, to the extent such communications would have been covered by legal privilege and not disclosable, had these communications been exchanged between such Party and its external attorneys.

17.11 **Headings**. Any headings used herein are for convenience in reference only and are not a part of this Agreement, nor shall they in any way affect the interpretation hereof

17.12 **Interpretation**. The captions to the articles and sections of this Agreement are not a part of this Agreement but are included for convenience of reference and shall not affect its meaning or interpretation. In this Agreement: (a) the word "including" shall be deemed to be followed by the phrase "without limitation" or like expression; and (b) the singular shall include the plural and vice versa. Each accounting term used herein that is not specifically defined herein shall have the meaning given to it under generally accepted cost accounting principles, but only to the extent consistent with its usage and the other definitions in this Agreement. This Agreement shall not confer any benefits on any Third Parties and no Third Party may enforce any term of this Agreement.

17.13 **Further Assurances**. Each Party hereto agrees that they will without further consideration execute and deliver such other documents and take such other actions as may be reasonably requested by the other Party to consummate more effectively the transactions and agreements contemplated hereby.

17.14 **No Partnership or Joint Venture**. Nothing in this Agreement is intended, or shall be deemed, to establish a joint venture or partnership between Atara and Partner. Neither Party to this Agreement shall have any express or implied right or authority to assume or create any obligations on behalf of, or in the name of, the other Party, or to bind the other Party to any contract, agreement or undertaking with any Third Party.

17.15 **Survival**. The following provisions of this Agreement, as well as the provisions of this Agreement which by their nature are intended to survive the termination, cancellation, completion or expiration of this Agreement, shall continue as valid and enforceable obligations of the Parties notwithstanding any such termination, cancellation, completion or expiration: Article 1 and Sections 2.3, 6.5, 6.6 (solely with respect to the licenses described therein), 7.4(b), 7.6 (solely to the extent that such audit relates to Product Commercialized during the Term), 8.6(a), 10.1, each of 11.8, 11.9, 11.10, and 11.11 (solely to the extent that such reports, records, payments and taxes

apply to the period prior to the effective date of termination), 12.7, 13.1-13.3 (solely with respect to Third Party Claims arising during the Term), 13.4, 13.5, 14, 16.8, 16.9, 17.

[Remainder of page intentionally left blank; signature page follows.]

IN WITNESS WHEREOF, the Parties intending to be bound have caused this Agreement to be executed by their duly authorized representatives.

ATARA BIOTHERAPEUTICS, INC.	**PIERRE FABRE MEDICAMENT**
By: /s/ Pascal Touchon	By: /s/ Jean-Luc Lowinski
Name: Pascal Touchon	Name: Jean-Luc Lowinski
Title: President and Chief Executive Officer	Title: President
Date: 10/1/2021	Date: 10/2/2021

List of Exhibits:

[***]

EXHIBIT A (Approved Sublicensee Countries or Distributor Countries)

[***]

EXHIBIT B (Transition Plan)

[***]

EXHIBIT C (Key Manufacturing and Supply Terms)

[***]

EXHIBIT D (Atara Patents)

[***]

EXHIBIT E (Atara Bank Account Information)

[***]

EXHIBIT F (Cell Selection Services)

[***]

EXHIBIT G (Product Trademarks)

[***]

EXHIBIT H (Royalty Report Template)

[***]

EXHIBIT I (Atara Officers)

[***]

Exhibit 10.36

SECOND AMENDMENT TO LEASE

THIS SECOND AMENDMENT TO LEASE (this " **Second Amendment**") is made as of December 9, 2021, by and between **611 GATEWAY CENTER LP, LLC**, a Delaware limited partnership (" **Landlord**"), and **ATARA BIOTHERAPEUTICS, INC.**, a Delaware corporation (" **Tenant**").

RECITALS

A. Landlord and Tenant are parties to that certain Office Lease dated as of November 25, 2015, as amended by that certain First Amendment to Lease dated as of October 21, 2020 (the "**First Amendment**") (as amended, the " **Lease**"), wherein Landlord leases to Tenant certain premises commonly known as Suite 900, containing approximately 13,670 rentable square feet (the "**Premises**") located at 611 Gateway Boulevard, South San Francisco, California, as more particularly described in the Lease. Capitalized terms used herein without definition shall have the meanings defined for such terms in the Lease.

B. Landlord and Tenant desire, subject to the terms and conditions set forth below, to amend the Lease to, among other things, extend the Base Term of the Lease through May 31, 2025 (the "**Second Amendment Expiration Date**").

NOW, THEREFORE, in consideration of the foregoing Recitals, which are incorporated herein by this reference, the mutual promises and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. **Extension of Lease Term**. Notwithstanding anything to the contrary contained in the Lease, the expiration date of the Lease Term with respect to the Premises is hereby extended through the Second Amendment Expiration Date. Tenant's occupancy of the Premises through the Second Amendment Expiration Date shall be on an "as-is" basis, and, except as otherwise set forth in the Work Letter attached to this Second Amendment, Landlord shall have no obligation to provide any tenant improvement allowance or make any alterations to the Premises.

2. **Base Rent.**

a. **Generally**. Tenant shall continue to pay Base Rent as provided for under the Lease through May 31, 2022 at a rate of $3.90 per rentable square foot of the Premises per month. Commencing on June 1, 2022, Base Rent shall be $4.00 per rentable square foot of the Premises per month. Base Rent shall be increased on June 1, 2023 and on each June 1st thereafter (each, an "Adjustment Date") by multiplying the Base Rent payable immediately before such Adjustment Date by 3% and adding the resulting amount to the Base Rent payable immediately before such Adjustment Date.

b. **Additional TI Allowance**. In addition to the Tenant Improvement Allowance (as defined in the Work Letter attached hereto as Exhibit A), Landlord shall, subject to the terms of the Work Letter, make available to Tenant the Additional Tenant Improvement Allowance (as defined in the Work Letter). Commencing on the date Tenant Improvements are Substantially Completed and continuing thereafter on the first day of each month during the Base Term, Tenant shall pay the amount necessary to fully amortize the portion of the Additional Tenant Improvement Allowance actually funded by Landlord, if any, in equal monthly payments with interest at a rate of 7% per annum over the Base Term, which interest shall begin to accrue on the date that Landlord first disburses such Additional Tenant Improvement Allowance or any portion(s) thereof ("TI Rent"). Any TI Rent remaining unpaid as of the expiration or earlier termination of this Lease shall be paid to Landlord in a lump sum at the expiration or earlier termination of this Lease.

3. **Tenant Improvements**. Following the date of this Second Amendment, Landlord and its contractors and agents shall have the right to enter the Premises to complete Landlord's Work (as defined in the Work Letter) pursuant to the Work Letter, and Tenant shall reasonably cooperate with Landlord in connection with the same. Tenant acknowledges that Landlord's completion of Landlord's Work may adversely affect Tenant's use and occupancy of the Premises. Landlord agrees to use reasonable efforts to perform Landlord's Work in a manner which does not unreasonably interfere with or cause a material disturbance of Tenant's use of the Premises and to cooperate and coordinate with Tenant to schedule any activities which are reasonably likely to cause a material disturbance with Tenant's use of the Premises in order for Tenant to reasonably mitigate such interference; provided, however, that Tenant recognizes that construction noise and vibrations associated with normal construction activities are to be expected during the course of Landlord's Work. Tenant waives all claims for rent abatement against Landlord in connection with the construction of Landlord's Work.

4. **Base Year**. For the period of the Lease Term between June 1, 2022 through the Second Amendment Expiration Date, the Base Year of the Lease shall mean calendar year 2022. For the avoidance of any doubt, Tenant shall not, during the period between June 1, 2022 and December 31, 2022, be required to pay any Excess.

5. **Security Deposit**. The defined term "**Letter of Credit**" on page 2 of the Lease shall be deleted in its entirety and replaced with the following:

"**Letter of Credit (Article 21)** : $145,750.17"

Landlord currently holds a L-C in the amount of $194,333.56 under the Lease. Landlord shall cooperate with Tenant, at no cost, expense or liability to Landlord, to reduce the L-C currently held by Landlord to the amount set forth above.

6. **No Right to Extend**. As of the date of this Second Amendment, Section 5 of the First Amendment is hereby deleted in its entirety and is null and void and of no further force or effect.

7. **Brokers**. Landlord and Tenant each represents and warrants that it has not dealt with any broker, agent or other person (collectively, " **Broker**") in connection with the transaction reflected in this Second Amendment and that no Broker brought about this transaction, other than Cushman & Wakefield and Newmark Knight Frank. Landlord and Tenant each hereby agree to indemnify and hold the other harmless from and against any claims by any Broker, other than Cushman & Wakefield and Newmark Knight Frank, claiming a commission or other form of compensation by virtue of having dealt with Tenant or Landlord, as applicable, with regard to this Second Amendment.

8. **California Accessibility Disclosure**. For purposes of Section 1938(a) of the California Civil Code, Landlord hereby discloses to Tenant, and Tenant hereby acknowledges, that the Project has not undergone inspection by a Certified Access Specialist (CASp). In addition, the following notice is hereby provided pursuant to Section 1938(e) of the California Civil Code: "A Certified Access Specialist (CASp) can inspect the subject premises and determine whether the subject premises comply with all of the applicable construction-related accessibility standards under state law. Although state law does not require a CASp inspection of the subject premises, the commercial property owner or lessor may not prohibit the lessee or tenant from obtaining a CASp inspection of the subject premises for the occupancy or potential occupancy of the lessee or tenant, if requested by the lessee or tenant. The parties shall mutually agree on the arrangements for the time and manner of the CASp inspection, the payment of the fee for the CASp inspection, and the cost of making any repairs necessary to correct violations of construction-related accessibility standards within the premises." In furtherance of and in connection with such notice: (i) Tenant, having read such notice and understanding Tenant's right to request and obtain a CASp inspection, hereby

elects not to obtain such CASp inspection and forever waives its rights to obtain a CASp inspection with respect to the Premises, Building and/or Project to the extent permitted by Legal Requirements; and (ii) if the waiver set forth in clause (i) hereinabove is not enforceable pursuant to Legal Requirements, then Landlord and Tenant hereby agree as follows (which constitutes the mutual agreement of the parties as to the matters described in the last sentence of the foregoing notice): (A) Tenant shall have the one-time right to request for and obtain a CASp inspection, which request must be made, if at all, in a written notice delivered by Tenant to Landlord; (B) any CASp inspection timely requested by Tenant shall be conducted (1) at a time mutually agreed to by Landlord and Tenant, (2) in a professional manner by a CASp designated by Landlord and without any testing that would damage the Premises, Building or Project in any way, and (3) at Tenant's sole cost and expense, including, without limitation, Tenant's payment of the fee for such CASp inspection, the fee for any reports prepared by the CASp in connection with such CASp inspection (collectively, the "CASp Reports") and all other costs and expenses in connection therewith; (C) the CASp Reports shall be delivered by the CASp simultaneously to Landlord and Tenant; (D) Tenant, at its sole cost and expense, shall be responsible for making any improvements, alterations, modifications and/or repairs to or within the Premises to correct violations of construction-related accessibility standards including, without limitation, any violations disclosed by such CASp inspection; and (E) if such CASp inspection identifies any improvements, alterations, modifications and/or repairs necessary to correct violations of construction-related accessibility standards relating to those items of the Building and Project located outside the Premises that are Landlord's obligation to repair as set forth in this Lease, then Landlord shall perform such improvements, alterations, modifications and/or repairs as and to the extent required by Legal Requirements to correct such violations, and Tenant shall reimburse Landlord for the cost of such improvements, alterations, modifications and/or repairs within 10 business days after Tenant's receipt of an invoice therefor from Landlord. Landlord and Tenant expressly acknowledge and agree that the foregoing provisions of this Section 8 shall apply only in the event that Tenant elects to obtain a CASp inspection. In the event that Tenant does not elect to obtain a CASp inspection, the terms and provisions of this Section 8 regarding the allocation of costs for alterations and improvements shall not be applicable.

9. **OFAC**. Tenant and all beneficial owners of Tenant are currently (a) in compliance with and shall at all times during the Term of the Lease remain in compliance with the regulations of the Office of Foreign Assets Control ("**OFAC**") of the U.S. Department of Treasury and any statute, executive order, or regulation relating thereto (collectively, the "**OFAC Rules**"), (b) not listed on, and shall not during the term of the Lease be listed on, the Specially Designated Nationals and Blocked Persons List maintained by OFAC and/or on any other similar list maintained by OFAC or other governmental authority pursuant to any authorizing statute, executive order, or regulation, and (c) not a person or entity with whom a U.S. person is prohibited from conducting business under the OFAC Rules.

10. **Miscellaneous**.

a. This Second Amendment is the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior and contemporaneous oral and written agreements and discussions. Reference to the Lease in this Second Amendment shall mean the Lease as amended by this Second Amendment. This Second Amendment may be amended only by an agreement in writing, signed by the parties hereto.

b. Once executed by both parties, this Second Amendment is binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

c. This Second Amendment may be executed in 2 or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf or any electronic

signature process complying with the U.S. federal ESIGN Act of 2000) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes. Electronic signatures shall be deemed original signatures for purposes of this Second Amendment and all matters related thereto, with such electronic signatures having the same legal effect as original signatures.

d. Except as amended and/or modified by this Second Amendment, the Lease is hereby ratified and confirmed and all other terms of the Lease shall remain in full force and effect, unaltered and unchanged by this Second Amendment. In the event of any conflict between the provisions of this Second Amendment and the provisions of the Lease, the provisions of this Second Amendment shall prevail. Whether or not specifically amended by this Second Amendment, all of the terms and provisions of the Lease are hereby amended to the extent necessary to give effect to the purpose and intent of this Second Amendment.

[Signatures are on the next page]

IN WITNESS WHEREOF, the parties hereto have executed this Second Amendment as of the day and year first above written.

LANDLORD:

611 GATEWAY CENTER LP, LLC,
a Delaware limited liability company

By: GATEWAY CENTER GP LLC,
a Delaware limited liability company,
general partner

By: GATEWAY PORTFOLIO MEMBER LLC,
a Delaware limited liability company,
managing member

By: GATEWAY PORTFOLIO HOLDINGS LLC,
a Delaware limited liability company,
managing member

By: ARE-SAN FRANCISCO NO. 83, LLC,
a Delaware limited liability company,
managing member

By: ALEXANDRIA REAL ESTATE EQUITIES, L.P.,
a Delaware limited partnership,
managing member

By: ARE-QRS CORP.,
a Maryland corporation,
general partner

By: /s/ Kristen Childs
Its: SVP, RE Legal Affairs

TENANT:

ATARA BIOTHERAPEUTICS, INC.,
a Delaware corporation

By: /s/ Pascal Touchon
Its: CEO

EXHIBIT A

WORK LETTER

THIS WORK LETTER dated December 9, 2021 (this "**Work Letter**") is made and entered into by and between **611 GATEWAY CENTER LP** , a Delaware limited partnership ("**Landlord**"), and **ATARA BIOTHERAPEUTICS, INC.**, a Delaware corporation ("**Tenant**"), and is attached to and made a part of the Office Lease dated as of November 25, 2015, as amended by that certain First Amendment to Lease dated as of October 21, 2020, and as further amended by that certain Second Amendment to Lease Agreement dated of even date herewith (as amended, the "**Lease**"), by and between Landlord and Tenant. Any initially capitalized terms used but not defined herein shall have the meanings given them in the Lease.

1. **General Requirements**.

(a) **Tenant's Authorized Representative**. Tenant designates Keith Kato, Andrew Arcuri and Tony Ma (any such individual acting alone, "**Tenant's Representative**") as the only persons authorized to act for Tenant pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any request, approval, inquiry or other communication ("**Communication**") from or on behalf of Tenant in connection with this Work Letter unless such Communication is in writing from Tenant's Representative. Tenant may change either Tenant's Representative at any time upon not less than 5 business days advance written notice to Landlord. Neither Tenant nor Tenant's Representative shall be authorized to direct Landlord's contractors in the performance of Landlord's Work (as hereinafter defined).

(b) **Landlord's Authorized Representative**. Landlord designates Linda Rey ("**Landlord's Representative**") as the only person authorized to act for Landlord pursuant to this Work Letter. Tenant shall not be obligated to respond to or act upon any request, approval, inquiry or other Communication from or on behalf of Landlord in connection with this Work Letter unless such Communication is in writing from Landlord's Representative. Landlord may change either Landlord's Representative at any time upon not less than 5 business days advance written notice to Tenant. Landlord's Representative shall be the sole persons authorized to direct Landlord's contractors in the performance of Landlord's Work.

(c) **Architects, Consultants and Contractors**. Landlord and Tenant hereby acknowledge and agree that: (i) the general contractor for the Tenant Improvements (the "**General Contractor**") and any subcontractors for the Tenant Improvements shall be selected by Landlord, subject to Tenant's approval, which approval shall not be unreasonably withheld, conditioned or delayed, and (ii) BRW Architects shall be the architect (the "**TI Architect**") for the Tenant Improvements.

2. **Tenant Improvements**.

(a) **Tenant Improvements Defined**. As used herein, "**Tenant Improvements**" shall mean all improvements to the Premises of a fixed and permanent nature as shown on the TI Construction Drawings, as defined in Section 2(c) below. Other than Landlord's Work (as defined in Section 3(a) below), Landlord shall not have any obligation whatsoever with respect to the finishing of the Premises for Tenant's use and occupancy.

(b) **Tenant's Space Plans**. Landlord and Tenant acknowledge and agree that the plan prepared by the TI Architect attached hereto as **Schedule 1** (the "**Space Plans**") has been approved by both Landlord and Tenant. Landlord and Tenant further acknowledge and agree that any changes to the Space Plans constitute a Change Request the cost of which changes shall be paid for by Tenant. Tenant shall be solely responsible for all costs incurred by Landlord to alter the Building (or Landlord's plans for the Building) as a result of Tenant's requested changes.

(c) **Working Drawings**. Landlord shall cause the TI Architect to prepare and deliver to Tenant for review and comment construction plans, specifications and drawings for the Tenant Improvements (" **TI Construction Drawings**"), which TI Construction Drawings shall be prepared substantially in accordance with the Space Plans. Tenant shall be solely responsible for ensuring that the TI Construction Drawings reflect Tenant's requirements for the Tenant Improvements. Tenant shall deliver its written comments on the TI Construction Drawings to Landlord not later than 10 business days after Tenant's receipt of the same; provided, however, that Tenant may not disapprove any matter that is consistent with the Space Plans without submitting a Change Request. Landlord and the TI Architect shall consider all such comments in good faith and shall, within 10 business days after receipt, notify Tenant how Landlord proposes to respond to such comments, but Tenant's review rights pursuant to the foregoing sentence shall not delay the design or construction schedule for the Tenant Improvements. Any disputes in connection with such comments shall be resolved in accordance with Section 2(d) hereof. Provided that the design reflected in the TI Construction Drawings is consistent with the Space Plans, Tenant shall approve the TI Construction Drawings submitted by Landlord, unless Tenant submits a Change Request. Once approved by Tenant, subject to the provisions of Section 4 below, Landlord shall not materially modify the TI Construction Drawings except as may be reasonably required in connection with the issuance of the TI Permit (as defined in Section 3(b) below).

(d) **Approval and Completion**. Upon any dispute regarding the design of the Tenant Improvements, which is not settled within 10 business days after notice of such dispute is delivered by one party to the other, Tenant may make the final decision regarding the design of the Tenant Improvements, provided (i) Tenant acts reasonably and such final decision is either consistent with or a compromise between Landlord's and Tenant's positions with respect to such dispute, (ii) that all costs and expenses resulting from any such decision by Tenant shall be payable out of the TI Fund (as defined in Section 5(d) below), and (iii) Tenant's decision will not affect the base Building, structural components of the Building or any Building systems. Any changes to the TI Construction Drawings following Landlord's and Tenant's approval of same requested by Tenant shall be processed as provided in Section 4 hereof.

3. **Performance of Landlord's Work**.

(a) **Definition of Landlord's Work**. As used herein, "**Landlord's Work**" shall mean the work of constructing the Tenant Improvements. Tenant shall be solely responsible for ensuring that the design and specifications for the Tenant Improvements are consistent with Tenant's requirements. Landlord shall be responsible for obtaining all permits, approvals and entitlements necessary for Landlord's Work, but shall have no obligation to, and shall not, secure any permits, approvals or entitlements related to Tenant's specific use of the Premises or Tenant's business operations therein.

(b) **Commencement and Permitting**. Landlord shall commence construction of the Tenant Improvements upon obtaining a building permit (the "**TI Permit**") authorizing the construction of the Tenant Improvements consistent with the TI Construction Drawings approved by Tenant. The cost of obtaining the TI Permit shall be payable from the TI Fund. Tenant shall assist Landlord in obtaining the TI Permit. If any Governmental Authority having jurisdiction over the construction of Landlord's Work or any portion thereof shall impose terms or conditions upon the construction thereof that: (i) are inconsistent with Landlord's obligations hereunder, (ii) increase the cost of constructing Landlord's Work, or (iii) will materially delay the construction of Landlord's Work, Landlord and Tenant shall reasonably and in good faith seek means by which to mitigate or eliminate any such adverse terms and conditions.

(c) **Completion of Landlord's Work**. Landlord shall substantially complete or cause to be substantially completed Landlord's Work in a good and workmanlike manner, in accordance with the TI Permit subject, in each case, to Minor Variations and normal "punch list" items of a non-material nature that do not interfere with the use of the Premises ("**Substantial Completion**" or "**Substantially Complete**"). Upon Substantial Completion of Landlord's Work, Landlord shall require the TI Architect and the General Contractor to execute and deliver, for the benefit of Tenant and Landlord, a Certificate of Substantial Completion in the form of the American Institute of Architects ("**AIA**") document G704. For purposes of this

Work Letter, "**Minor Variations**" shall mean any modifications reasonably required: (i) to comply with all applicable Legal Requirements and/or to obtain or to comply with any required permit (including the TI Permit); (ii) to comply with any request by Tenant for modifications to Landlord's Work; (iii) to comport with good design, engineering, and construction practices that are not material; or (iv) to make reasonable adjustments for field deviations or conditions encountered during the construction of Landlord's Work.

(d) **Selection of Materials**. Where more than one type of material or structure is indicated on the TI Construction Drawings approved by Landlord and Tenant, the option will be selected at Landlord's sole and absolute subjective discretion. As to all building materials and equipment that Landlord is obligated to supply under this Work Letter, Landlord shall select the manufacturer thereof in its sole and absolute subjective discretion.

(e) **Delivery of the Tenant Improvements**. When Landlord's Work is Substantially Complete, subject to the remaining terms and provisions of this Section 3(e), Tenant shall accept the Tenant Improvements. Tenant's taking possession and acceptance of the Tenant Improvements shall not constitute a waiver of: (i) any warranty with respect to workmanship (including installation of equipment) or material (exclusive of equipment provided directly by manufacturers), (ii) any non-compliance of Landlord's Work with applicable Legal Requirements, or (iii) any claim that Landlord's Work was not completed substantially in accordance with the TI Construction Drawings (subject to Minor Variations and such other changes as are permitted hereunder) (collectively, a "**Construction Defect**"). Tenant shall have one year after Substantial Completion within which to notify Landlord of any such Construction Defect discovered by Tenant, and Landlord shall use reasonable efforts to remedy or cause the responsible contractor to remedy any such Construction Defect within 30 days thereafter. Notwithstanding the foregoing, Landlord shall not be in default under the Lease if the applicable contractor, despite Landlord's reasonable efforts, fails to remedy such Construction Defect within such 30-day period, in which case Landlord shall have no further obligation with respect to such Construction Defect other than to cooperate, at no cost to Landlord, with Tenant should Tenant elect to pursue a claim against such contractor, provided that Tenant shall defend with counsel reasonably acceptable to Landlord, indemnify and hold Landlord harmless from and against any claims arising out of or in connection with any such claim.

Tenant shall be entitled to receive the benefit of all construction warranties and manufacturer's equipment warranties relating to equipment installed in the Premises pursuant to this Work Letter. If requested by Tenant, Landlord shall attempt to obtain extended warranties from manufacturers and suppliers of such equipment, but the cost of any such extended warranties shall be borne solely out of the TI Fund. Landlord shall promptly undertake and complete, or cause to be completed, all punch list items.

4. **Changes**. Any changes requested by Tenant to the Tenant Improvements after the date of this Work Letter shall be requested and instituted in accordance with the provisions of this Section 4 and shall be subject to the written approval of Landlord and the TI Architect, such approval not to be unreasonably withheld, conditioned or delayed.

(a) **Tenant's Request For Changes**. If Tenant shall request changes to the Tenant Improvements ("**Changes**"), Tenant shall request such Changes by notifying Landlord in writing in substantially the same form as the AIA standard change order form (a "**Change Request**"), which Change Request shall detail the nature and extent of any such Change. Such Change Request must be signed by Tenant's Representative. Landlord shall, before proceeding with any Change, use commercially reasonable efforts to respond to Tenant as soon as is reasonably possible with an estimate of: (i) the time it will take, and (ii) the architectural and engineering fees and costs that will be incurred, to analyze such Change Request (which costs shall be paid from the TI Fund to the extent actually incurred, whether or not such change is implemented). Landlord shall thereafter submit to Tenant in writing, within 5 business days of receipt of the Change Request (or such longer period of time as is reasonably required depending on the extent of the Change Request), an analysis of the additional cost or savings involved, including, without limitation, architectural and engineering costs and the period of time, if any, that the Change will extend the date on which Landlord's Work will be Substantially Complete. Any such delay in the completion of

Landlord's Work caused by a Change, including any suspension of Landlord's Work while any such Change is being evaluated and/or designed, shall be a delay caused by Tenant.

(b) **Implementation of Changes**. If Tenant: (i) approves in writing the cost or savings and the estimated extension in the time for completion of Landlord's Work, if any, and (ii) deposits with Landlord any Excess TI Costs required in connection with such Change, Landlord shall cause the approved Change to be instituted. Notwithstanding any approval or disapproval by Tenant of any estimate of the delay caused by such proposed Change, the TI Architect's determination of the amount of delay caused by Tenant in connection with such Change shall be final and binding on Landlord and Tenant.

5. **Costs**.

(a) **Budget For Tenant Improvements** . Before the commencement of construction of the Tenant Improvements, Landlord shall obtain a detailed breakdown by trade of the costs incurred or that will be incurred in connection with the design and construction of the Tenant Improvements (the "**Budget**"). The Budget shall be based upon the TI Construction Drawings approved by Tenant and shall include a payment to Landlord of administrative rent ("**Administrative Rent**") equal to 5% of the TI Costs for monitoring and inspecting the construction of the Tenant Improvements and Changes, which sum shall be payable from the TI Fund (as defined in Section 5(d). Administrative Rent shall include, without limitation, all out-of-pocket costs, expenses and fees incurred by or on behalf of Landlord arising from, out of, or in connection with monitoring the construction of the Tenant Improvements and Changes, and shall be payable out of the TI Fund. If the Budget is greater than the TI Allowance, Tenant shall deposit with Landlord the difference, in cash, prior to the commencement of construction of the Tenant Improvements or Changes, for disbursement by Landlord as described in Section 5(d).

(b) **TI Allowance**. Landlord shall provide to Tenant a tenant improvement allowance (collectively, the " **TI Allowance**") as follows:

1. a "**Tenant Improvement Allowance** " in the maximum amount of $246,060.00 in the aggregate, which is included in the Base Rent set forth in the Lease; and

2. an "**Additional Tenant Improvement Allowance** " in the maximum amount of $683,500.00 in the aggregate, which shall, to the extent used, result in TI Rent as set forth in Section 2(b) of the Second Amendment.

Tenant may only elect to use the Additional Tenant Improvement Allowance (or portions thereof, as applicable) after the Tenant Improvement Allowance has been fully disbursed. Tenant shall have no right to any portion of the TI Allowance that is not disbursed before the last day of the month that is 12 months after the date of this Second Amendment.

The TI Allowance shall be disbursed in accordance with this Work Letter.

Tenant shall have no right to the use or benefit (including any reduction to or payment of Base Rent) of any portion of the TI Allowance not required for the construction of (i) the Tenant Improvements described in the TI Construction Drawings approved pursuant to Section 2(d) or (ii) any Changes pursuant to Section 4.

(c) **Costs Includable in TI Fund** . The TI Fund shall be used solely for the payment of design, permits and construction costs in connection with the construction of the Tenant Improvements, including, without limitation, the cost of preparing the Space Plan and the TI Construction Drawings, all costs set forth in the Budget, including Landlord's Administrative Rent, Landlord's out-of-pocket expenses, costs resulting from delays caused by Tenant and the cost of Changes (collectively, "**TI Costs**"). Notwithstanding anything to the contrary contained herein, the TI Fund shall not be used to purchase any furniture, personal property

or other non-Building system materials or equipment, including, but not limited to, Tenant's voice or data cabling, non-ducted biological safety cabinets and other scientific equipment not incorporated into the Tenant Improvements.

(d) **Excess TI Costs**. Landlord shall have no obligation to bear any portion of the cost of any of the Tenant Improvements except to the extent of the TI Allowance. If at any time the remaining TI Costs under the Budget exceed the remaining unexpended TI Allowance, Tenant shall deposit with Landlord, as a condition precedent to Landlord's obligation to complete the Tenant Improvements, 100% of the then current TI Cost in excess of the remaining TI Allowance ("**Excess TI Costs**"). If Tenant fails to deposit any Excess TI Costs with Landlord, Landlord shall have all of the rights and remedies set forth in the Lease for nonpayment of Rent (including, but not limited to, the right to interest at the Default Rate and the right to assess a late charge). For purposes of any litigation instituted with regard to such amounts, those amounts will be deemed Rent under the Lease. The TI Allowance and Excess TI Costs are herein referred to as the "**TI Fund**." Funds deposited by Tenant shall be the first disbursed to pay TI Costs. Notwithstanding anything to the contrary set forth in this Section 5(d), Tenant shall be fully and solely liable for TI Costs and the cost of Minor Variations in excess of the TI Allowance. If upon completion of the Tenant Improvements and the payment of all sums due in connection therewith there remains any undisbursed portion of the TI Fund, Tenant shall be entitled to such undisbursed TI Fund solely to the extent of any Excess TI Costs deposit Tenant has actually made with Landlord.

6. **Tenant Access**.

(a) **Tenant's Access Rights**. Landlord and Tenant acknowledge that, pursuant to the terms of the Lease, Tenant is occupying the Premises during the construction of the Tenant Improvements. Tenant shall have the right to continue to occupy the Premises (except those portions of the Premises in which the Tenant Improvements are being constructed while Tenant Improvements are being constructed in such portions) at Tenant's sole risk and expense, during the construction of the Tenant Improvements; provided, however, that Tenant's occupancy shall be coordinated with the TI Architect and the general contractor and shall be subject to Tenant's compliance with (i) applicable Legal Requirements, and (ii) all other reasonable restrictions which Landlord, the TI Architect or the General Contractor may impose. Tenant shall cooperate with Landlord in connection with the performance of the Tenant Improvements.

(b) **No Interference**. Neither Tenant nor any Tenant Party (as defined in the Lease) shall interfere with the performance of Landlord's Work, nor with any inspections or issuance of final approvals by applicable Governmental Authorities, and upon any such interference, Landlord shall have the right to exclude Tenant and any Tenant Party from the portions of the Premises in which Landlord's Work is being performed until Substantial Completion of Landlord's Work.

7. **Miscellaneous**.

(a) **Consents**. Whenever consent or approval of either party is required under this Work Letter, that party shall not unreasonably withhold, condition or delay such consent or approval, unless expressly set forth herein to the contrary.

(b) **Modification**. No modification, waiver or amendment of this Work Letter or of any of its conditions or provisions shall be binding upon Landlord or Tenant unless in writing signed by Landlord and Tenant.

(c) **No Default Funding**. In no event shall Landlord have any obligation to fund any portion of the TI Allowance or to perform any Landlord's Work during any period that Tenant is in Default under the Lease.

SCHEDULE 1

Space Plans[1]

[1] For the avoidance of doubt, the Tenant Improvements do not include any furniture, fixtures or equipment shown on the Space Plans, and Tenant shall be responsible for obtaining its own furniture, fixtures and equipment for the Premises, at Tenant's sole cost and expense.

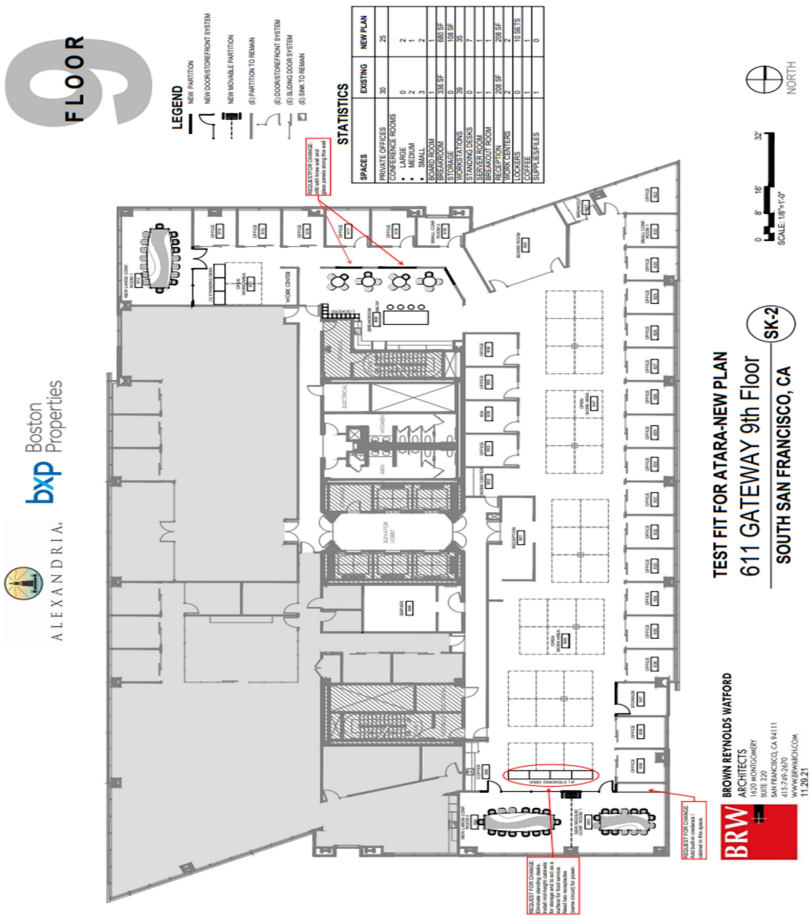

Exhibit 10.37

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

EXECUTION VERSION

FOURTH AMENDED AND RESTATED RESEARCH AND DEVELOPMENT COLLABORATION AGREEMENT

BETWEEN

THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH

AND

ATARA BIOTHERAPEUTICS, INC.

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FOURTH AMENDED AND RESTATED RESEARCH AND DEVELOPMENT COLLABORATION AGREEMENT

This Fourth Amended and Restated Research and Development Collaboration Agreement ("**Fourth Restated Agreement**"), entered into on December 17, 2021 ("**Execution Date** "), and effective as of the Execution Date, is made by and between **Atara Biotherapeutics, Inc.**, having its principal offices at 611 Gateway Blvd #900, South San Francisco, CA 94080, (" **Atara**"), and the **Council of the Queensland Institute of Medical Research**, a not-for-profit Institute organized and existing under the laws of the State of Queensland having its principal offices at 300 Herston Rd, Herston QLD 4006, Australia ("**Institute**"). Each of Atara and Institute are referred to in this Agreement as a "**Party**", and collectively as the "**Parties**"

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

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

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

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

WHEREAS, Atara and Institute are parties to that certain Research and Development Collaboration Agreement (the "**Original Research Agreement**"), entered into on October 20, 2015 (the "**Original Effective Date** "), which was amended and restated as of September 23, 2016 (the "**First Restatement Date**") pursuant to that certain Amended and Restated Research and Development Collaboration Agreement and was subsequently amended on December 15, 2017, April 24, 2018 and May 9, 2018 (as so amended, the "**First Restated Agreement**") effective as of the Original Effective Date, which was, in turn, amended and restated as of August 28, 2019 (the "**Second Restatement Date**") pursuant to that certain Second Amended and Restated Research and Development Collaboration Agreement (the "**Second Restated Agreement**"), which was in turn, amended and restated as of August 26, 2020 (the "**Third Restatement Date**") pursuant to that certain Third Amended and Restated Research and Development Agreement (The "**Third Restated Agreement**"), and now the Parties desire to amend and restate the Third Restated Agreement in its entirety to, among other things, [***], all as set forth in this Fourth Restated Agreement; and

WHEREAS, the Parties desire that intellectual property rights and technology developed as a result of activities conducted under this Agreement be licensed to Atara for the further development and commercialization of CTL products based on novel allogeneic and autologous

CTLs for use in the diagnosis, treatment, prophylaxis and palliation of diseases and conditions associated with EBV, and to that end, the Parties entered into the that certain exclusive License Agreement (the "**Original License Agreement** ") simultaneous with the Original Research Agreement on the Original Effective Date, which Original License Agreement was amended and restated as of the First Restatement Date pursuant to that certain Amended and Restated Exclusive License Agreement ("**First Restated License Agreement**"), which was, in turn, amended and restated on the Second Restatement Date pursuant to that certain Second Amended and Restated Exclusive License Agreement ("**Second Restated License Agreement**"), which was, in turn, amended and restated on the Third Restatement Date pursuant to that certain Third Amended and Restated Exclusive License Agreement and was subsequently amended on April 21, 2021 to [***] ("**Third Restated License Agreement**") and the Third Restated License Agreement is being amended and restated in its entirety pursuant to that certain Fourth Amended and Restated Exclusive License Agreement simultaneously with entering into this Fourth Restated Agreement (the "**Fourth Restated License Agreement**").

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

1. **DEFINITIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.43 "**HPV**" means human papilloma virus.

1.44 "**HPV TCR Budget**" means the mutually agreed upon budget for the HPV TCR Program.

1.45 "**HPV TCR Development Plan**" means the mutually agreed upon development plan for the HPV TCR Program.

1.46 "**HPV TCR Program**" means the New Research Program Specifically Directed to such Targets expressed in association with HPV, in such Indications as the Parties may mutually agree in writing from time to time.

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

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

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

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

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

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

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

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

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

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

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

1.58 "**Licensed Products**" shall have the meaning given in the License Agreement.

1.59 "**LMP1**" means latent membrane protein 1.

1.60 "**LMP2**" means latent membrane protein 2.

1.61 "**Losses**" shall have the meaning given in Section 12.1.

1.62 "**Major Market**" shall have the meaning given in the License Agreement.

1.63 "**MS**" shall have the meaning given in Section 2.1(a).

1.64 "**MSK Agreement**" shall have the meaning given in the License Agreement.

1.65 "**New CTL Products**" shall have the meaning given in Section 2.3(a).

1.66 "**New Research Information Package**" shall have the meaning given in Section 2.3(b).

1.67 "**New Research Programs**" shall have the meaning given in Section 2.3(a).

1.68 "**New Research Proposal**" shall have the meaning given in Section 2.3(b).

1.69 "**NHL**" shall have the meaning given in Section 2.1(a).

1.70 "[***]" shall have the meaning given in Section 2.1(a).

1.71 "**Option**" shall have the meaning given in the License Agreement.

1.72 "**Original Research Agreement**" shall have the meaning given in the recitals hereto.

1.73 "**Original License Agreement**" shall have the meaning given in the recitals hereto.

1.74 "**Other Work**" shall have the meaning given in Section 5.2.

1.75 "**Principal Investigator**" means Professor Rajiv Khanna.

1.76 "**Program**" means, on a Target-by-Target basis, any and all preclinical development, clinical development, manufacturing and commercialization activities with respect to any and all products directed to such Target. Programs include (a) the Allogeneic Programs, (b) the Autologous Programs and (c) any New Research Programs.

1.77 "**Program** [***]" shall have the meaning given in Section 2.3(a).

1.78 "[***] **Payment**" shall have the meaning given in Section 2.7(a).

1.79 "[***] **Capacity**" shall have the meaning given in Section 2.7(a).

1.80 "[***] **Period**" shall have the meaning given in Section 2.7(b).

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

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

1.83 "**Research Collaboration**" shall have the meaning given in Section 2.1.

1.84 "**Research Milestone**" shall have the meaning given in Section 4.4(a).

1.85 "**Research Milestone Payment**" shall have the meaning given in Section 4.4(a).

1.86 "**Rules of Arbitration**" shall have the meaning given in Section 14.2.

1.87 "**Second Restated Agreement**" shall have the meaning given in the recitals hereto.

1.88 "**Second Restated License Agreement**" shall have the meaning given in the recitals hereto.

1.89 "**Second Restatement Date**" shall have the meaning given in the recitals hereto.

1.90 "**Specifically Directed**" shall have the meaning given in the License Agreement.

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

1.92 "**Term**" shall have the meaning given in Section 15.1.

1.93 "**Territory**" means worldwide.

1.94 "**Third Party**" means any Person (as defined in the License Agreement) other than Institute, Atara or any of their respective Affiliates.

1.95 "**Third Restated Agreement**" shall have the meaning given in the recitals hereto.

1.96 "**Third Restated License Agreement**" shall have the meaning given in the recitals hereto.

1.97 "**Third Restatement Date**" shall have the meaning given in the recitals hereto.

1.98 "[***]" shall have the meaning given in the License Agreement.

1.99 "[***] **Milestone**" shall have the meaning given in Section 4.4(b).

1.100 "[***] **Period**" shall have the meaning given in the License Agreement.

1.101 "[***] **Milestone Payment**" shall have the meaning given in Section 4.4(b).

1.102 " [***] **Budget**" shall have the meaning given in Section 2.6(f).

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

1.104 "**Wind Down Activities**" shall have the meaning given in Section 15.5(b).

2. SCOPE OF THE COLLABORATION

2.1 **Scope**. Pursuant to this Agreement, as further provided in this Article 2, during the Term:

(a) Atara and Institute shall collaborate to conduct the Allogeneic Programs as set forth in Section 2.2 and the Development Plan, with the intention of identifying and developing CTL Products Specifically Directed to (i) Targets expressed in association with EBV, including [***], and such other Targets as may be incorporated in the Development Plan, for use in the diagnosis, prophylaxis, treatment and palliation of (A) multiple sclerosis ("**MS**"), (B) [***](collectively (A) through [***], the "**Initial EBV Indications**") and such other Indications as may be incorporated in the Development Plan, and (ii) such other Indications as the Parties may mutually agree in the Development Plan;

(b) Institute shall use Commercially Reasonable Efforts to conduct the Autologous Programs, as set forth in the Development Plan, with the intention of progressing the clinical development of Autologous CTL Products Specifically Directed to Targets expressed in association with EBV for the prophylaxis, treatment and palliation of [***] MS.

The foregoing activities, as well as any New Research Programs conducted by the Parties pursuant to Section 2.3, and activities conducted pursuant to the License Agreement, together, shall be the "**Research Collaboration**".

2.2 **Conduct of the Research Collaboration** . The Research Collaboration shall be conducted at Institute under the supervision of the Principal Investigator and commenced promptly after the Original Effective Date. Institute shall use Commercially Reasonable Efforts to conduct the Autologous Programs, and the Parties shall use Commercially Reasonable Efforts to conduct the Allogeneic Programs, in accordance with all applicable laws, rules and regulations, the terms and conditions of this Agreement, the Development Plan attached as Schedule 2.2 and incorporated by reference herein, and in the case of the Allogeneic Programs under the supervision of the JSC. Institute will furnish the facilities, know-how, and technical skills necessary for performance of the Research Collaboration. Anything in this Agreement to the contrary notwithstanding, Atara and Institute may at any time modify the scope of the Research Collaboration, including the Development Plan, by mutual written agreement in a document executed by duly authorized representatives of both Parties or otherwise expressly agreed to in writing by the Alliance Managers and representatives on the JSC of both Parties that states that it is effectuating such a modification.

2.3 **New Research**.

(a) During the term of this Agreement, if either Party wishes to pursue a program of activities directed to (i) the research and development of pharmaceutical or biologic products comprising Autologous CTLs or Allogeneic CTLs, or [***], in each case Specifically Directed to Targets that are not associated with EBV ("**New CTL Products**"), or (ii) the research and development of the [***] arising from the [***] Programs (the "**Program** [***]" as further defined in the License Agreement), (such research and development programs in (i) and (ii), each

a "**New Research Program**"), such Party may propose to the JSC that such New Research Program is included within the scope of the Research Collaboration.

(b) If the Parties, through the JSC, agree that a New Research Program should be investigated with a view to inclusion within the Research Collaboration, Institute shall prepare and present a proposal (a "**New Research Proposal** ") to the JSC for discussion. Any New Research Proposal shall include, at a minimum: (i) the Target(s) for such New CTL Products or Program [***], as applicable, (ii) a description of the proposed research and development activities, including an estimated timeline for such development, (iii) a good faith estimated budget for such development activities, (iv) a description of any material know-how, data, results or information in the possession and control of Institute that is necessary for Atara (and the JSC) to determine whether or not to pursue the New Research Program, and (v) a listing of the patent rights (including any such patent rights owned or controlled by any Third Party) that (A) cover or claim such New CTL Products or Program [***], or (B) Institute reasonably believes may be necessary or useful for the conduct of the proposed development activities, including in each case the owner or licensor under any Third Party patent rights, and (vi) any other information that Atara or the JSC may request in order to make a decision as to whether or not to progress the New Research Program (the information and materials in (i) through (vi), the "**New Research Information Package**"). Any such New Research Proposal shall be presented to the JSC no less than thirty (30) days prior to the JSC meeting at which such New Research Proposal is to be considered.

(c) The JSC shall discuss any New Research Proposal at the next JSC meeting following the delivery by Institute of the New Research Information Package, and shall determine whether the Parties should include the New Research Program within the scope of the Research Collaboration. A Party may withhold its consent to inclusion of any New Research Program within the scope of the Research Collaboration at its sole discretion. If the Parties mutually agree to progress any New Research Program, the Parties shall consult to prepare a formal development plan and budget for such New Research Program for review and approval by the JSC (subject to Atara's final decision making right under Section 3.3(f)).

(d) If the Parties agree to conduct a New Research Program, then within sixty (60) days following the finalization of the development plan and budget for such New Research Program (or such other timing as may be agreed to in writing by the Parties), such development plan and budget shall be added to and incorporated within the Development Plan and Budget, the Parties shall amend the License Agreement to provide that any New CTL Products and/or Program [***] shall be included within the scope of Licensed Products, and subject to the licenses granted pursuant to the License Agreement, and to make any other necessary amendments to the License Agreement in order to effect such change to the scope of Licensed Products, including, in the case of the New Research Program(s) including the Program [***], amendments to the economic terms applicable to Licensed Products arising from such New Research Program(s). With the exception of such amendments, all other terms and conditions of the License Agreement shall apply equally to any New CTL Product and the Program [***] as to any other Licensed Product, provided that (i) the Milestone Payments applicable to any such New CTL Product shall be those set forth in the column under the heading "Research Milestone Payments – Licensed Product Arising Directly From Activities under New Research Programs" in the table in Section 4.4(a) of this Agreement and under the heading "Milestone Payments – Licensed Product Arising Directly From Activities under Research Agreement" in Section 4.3(a) of the License Agreement, and (ii) the Milestone Payments applicable to any such Program [***] shall be those set forth in the column under the heading "[***]" in the table in Section 4.4(b) of this Agreement and under the heading "Milestone Payments – Licensed Product Arising Directly From Activities under Research Agreement" in Section 4.3(a) of the License

Agreement. Except for (A) any funding that Atara agrees to provide for research and development activities to be conducted under any New Research Program pursuant to this Agreement, and (B) amounts payable by Atara for any New Research Program including the Program [***], no other consideration shall be payable by Atara for the foregoing amendment of the License Agreement and the grant by Institute to Atara of exclusive license rights in New CTL Products and/or Program [***] arising from such New Research Program.

(e) If Institute provides Atara with a New Research Information Package pursuant to this Section 2.3, and Atara does not wish to fund such research and development activities, or include such research and development activities within the scope of the Research Collaboration, then subject to the terms and conditions of this Agreement and the License Agreement (including Section 7 (Certain Covenants) thereof), Institute may (i) pursue the research and development of such New Research Program independently or with any Affiliate, and/or (ii) shall be free to discuss terms and conditions for the grant of rights to any Third Party to participate in the research, development and commercialization of the New CTL Products that are the subject of such New Research Program, without further obligation to Atara with respect to such New Research Program. For clarity, this subsection (e) shall not apply to any New Research Programs including the Program [***], which shall instead be subject to Section 2.6(e) below.

2.4 **Diligence**. Each Party shall use Commercially Reasonable Efforts to conduct the Research Collaboration by performing the activities allocated to such Party pursuant to this Agreement and the Development Plan (including any activities relating to New Research Programs that the Parties mutually agree to include within the scope of the Research Collaboration).

2.5 **Regulatory Activities**. Atara shall be solely responsible, at Atara's expense, for preparing all submissions to any regulatory authority and making all regulatory filings in the Territory in relation to CTL Products arising from (a) activities conducted with respect to the Allogeneic CTL Programs, (b) activities conducted with respect to the Autologous CTL Programs, and (c) New CTL Products and Program [***] arising out of New Research Programs conducted hereunder, in each case in accordance with Section 5.5 of the License Agreement. Institute was solely responsible at Institute's expense, for preparing all submissions to any regulatory authority and making all regulatory filings in the Territory in relation to CTL Products arising from activities conducted with respect to the Autologous CTL Programs prior to the exercise of the Option pursuant to Section 2.2 of the License Agreement.

2.6 **Specific New Research Programs**.

(a) **HPV TCR Program**. [***].

(b) **HPV TCR Program Funding**. [***].

(c) **BKV/JCV CTL Program**. [***].

(d) **BKV/JCV CTL Program Funding**. [***].

(e) [***] **Programs**. Following discussion through the JSC in accordance with Section 2.3 , as of the First Restatement Date, the Parties agreed to include the [***] Programs as a New Research Program within the scope of this Agreement. For the purposes of this Agreement the [***] Programs shall be deemed to be Allogeneic Programs. The Parties previously agreed on a development plan setting out the research and development activities to be conducted for each of the [***] Programs during the [***] Period (the "[***] **Development Plan**", and the "[***] **Development Plan**", and collectively the "[***] **Programs Development Plan**". The Parties have agreed on a revised [***] Development Plan, along with a mutually agreed budget for such activities, as further set forth in subsection (f) below, which has been added to and incorporated within the Development Plan, and which the Parties may mutually agree in writing to update from time to time. If Atara exercises the [***] for the [***] Program pursuant to Section 2.6 of the License Agreement, such Program [***] will become Licensed Products, and such Licensed Products arising as a result of activities under the [***] Programs shall be subject to the applicable Research Milestone Payments set forth in the table in Section 4.4(b).

(f) [***] **Program Funding**.

(i) The [***] Programs Development Plan shall include a mutually agreed budget for each of the [***] Program and the [***] Program (each, a "[***] **Program Budget**"), which the Parties expect to cover all direct and indirect costs of the conduct of the [***] Programs during the [***] Period. The Parties agree that Atara has terminated the [***] for the [***] Program and that they have agreed on a [***] Program Budget for the [***] Program of [***] (the "**Final** [***] **Budget**"), and that other than the amounts contemplated by the Final [***]Budget, Atara will have no further costs or payment obligations associated with the [***] Program, including any incremental wind-down or close-out costs.

(ii) Atara shall pay an annual amount set forth in the [***] Program Budget existing as at the Execution Date, or after the time period covered by such [***] Program Budget, as otherwise to be agreed by the Parties in accordance with subsection (iii) below, to be allocated against the costs set forth in each [***] Program Budget (each, a "[***]**Research Contribution**" and collectively the "[***] **Research Contribution**"). Institute shall use Commercially Reasonable Efforts to ensure that any FTEs assigned to perform activities under the [***] Programs devote at least [***] of their total working time to activities under the [***] Development Plan, unless otherwise mutually agreed by the Parties. The allocation of the [***] Research Contribution to activities under each of the [***] Programs prior to June 30, 2019 shall be at Institute's discretion and thereafter shall be allocated solely to the [***] Program, and the timing of payments to be made to Institute out of such amount are as set forth in Section 2.6 of the License Agreement. The Parties may mutually agree upon changes to the [***] Research

Contribution (subject to Section 2.6(f)(iii) below with respect to a [***] Budget, and to Atara's final decision making authority under Section 3.3(f) with respect to any other increase thereto), or changes in the allocation of a [***] Budget to activities under the [***] Development Plan.

(iii) Following the Execution Date, the Parties shall discuss in good faith through the JSC and otherwise and may mutually agree upon an updated [***] Development Plan and an updated [***] Budget, in each case for the [***] Program, to cover such period and such matters and expenditures as are not covered in the [***] Development Plan and [***] Budget agreed as at the Execution Date. Thereafter, the Parties shall update the [***] Development Plan and the [***] Budget for the [***] Program at least annually. If, at any time during the term of this Agreement, the Parties are unable to agree upon either the content of the updated [***] Development Plan or the updated [***] Budget, then (A) Institute shall have the final decision with respect to the [***] Development Plan, and (B) Atara shall have the final decision with respect to the amount of the [***] Research Contribution to be provided by Atara to fund activities during the applicable time period, provided that in no event shall the [***] Research Contribution funded by Atara in any twelve (12) month period for which the [***] Budget is in dispute be less than the greater of (x) the highest amount offered by Atara by way of [***] Research Contribution during such failed negotiations for the applicable twelve (12) month period, and (y) the amount funded by Atara for the [***] Research Contribution for the most recent twelve (12) month period.

2.7 [***] **Manufacturing Support**.

(a) In addition to the funding provided by Atara for the [***] Programs set forth in Section 2.6 , Atara paid to Institute a one-off lump-sum payment of [***] (the "[***] **Payment** "), which was used by Institute for [***] (the "[***] **Capacity**"). The [***] Capacity shall be used by Institute to provide manufacturing and related services to support activities under all Programs included within the Development Plan, including the [***] Programs and any other New Research Programs that may be added to this Agreement from time to time.

(b) In consideration for the [***] Payment, until Institute has [***] necessary for the conduct of (a) [***] (as defined in the License Agreement) and (b) all other [***] set forth in the Development Plan that are [***] the first Licensed Product (including, for clarity, the first EBV-Specific CTL Product) arising from activities under the Research Agreement (the "[***] **Period**"), Institute shall utilize the [***] Capacity for manufacturing activities required under the Development Plan and any other New Research Programs in accordance with the following protocol.

(c) During the [***] Period, on a calendar quarterly basis Atara will issue to Institute in good faith rolling forecasts (each, an "**Atara Forecast**") of its requirements for use of the [***] Capacity for the following six months (the "**Atara Forecast Quantity**"). During the [***] Period, the [***] Capacity shall be used first to manufacture any amounts included in the Atara Forecast Quantity before it can be used for manufacturing services for any Third Party. If Institute wishes to utilize the [***] Capacity for any other activities during the [***] Period, including the performance of activities for Third Parties and/or outside the scope of the Programs included within the Development Plan, it may do so to the extent that such use is not allocated to the Atara Forecast Quantity, provided that Institute shall first obtains Atara's prior

written consent to the use of such excess capacity, not to be unreasonably withheld or delayed. Without limiting the foregoing, Institute may not offer the [***] Capacity to any Third Party for services outside any time period covered by an Atara Forecast without Atara's prior written consent, which consent may not be unreasonably withheld or delayed.

3. **GOVERNANCE**.

3.1 **Management** . The Parties have established and shall maintain a cross-functional, joint steering committee (the "**Joint Steering Committee**" or the "**JSC**") which shall oversee the research collaboration between the Parties, including Allogeneic CTL Programs, Autologous Programs, and any agreed New Research Programs conducted under this Agreement and the License Agreement.

3.2 **Alliance Managers**.

(a) Each of Atara and Institute shall appoint one representative who possesses an understanding of development, regulatory, manufacturing and commercialization matters to act as its respective alliance manager(s) for this relationship (an "**Alliance Manager**"). Each Party may replace its respective Alliance Manager at any time upon written notice to the other in accordance with this Agreement. Any Alliance Manager may designate a substitute to temporarily perform the functions of that Alliance Manager. Each Alliance Manager shall be charged with creating and maintaining a collaborative work environment within the JSC. Consistent with the Development Plan, each Alliance Manager, will also be responsible for (i) providing a primary single point of communication responsible for the flow of communication and for seeking consensus (both within such Party's organization and with respect to activities under this Agreement or the License Agreement) regarding key strategy and plan issues, and (ii) identifying and raising disputes to the JSC for discussion in a timely manner; and

(b) Each Alliance Manager shall have the right to attend all JSC meetings and meetings of any subcommittee thereof, as a nonvoting member. Each Alliance Manager may bring any matter to the attention of the JSC where such Alliance Manager reasonably believes that such matter requires attention of the JSC.

3.3 **Joint Steering Committee**.

(a) Composition. The Joint Steering Committee shall be comprised of two (2) named representatives of each Party (or such other number as the Parties may agree) in addition to each Party's Alliance Manager who are members ex-officio. The JSC will be led by two (2) co-chairs, one (1) appointed by each of the Parties. Each Party may replace one or more of its representatives, in its sole discretion, effective upon written notice to the other Party of such change.

(b) Function and Powers of the JSC. The JSC shall, in line with the terms and conditions set forth in the Agreement:

(i) define the scope of the research and development activities to be conducted under this Agreement, including by reviewing and approving the initial

Development Plan, and each update to the Development Plan and associated Budget, and review progress against the goals in such Development Plan;

(ii) discuss and agree upon the allocation of the Budget to activities under the Development Plan;

(iii) discuss and comment on updates provided by Institute in relation to the Autologous Programs;

(iv) review and discuss proposals for new Indications for Licensed Products to be included within the activities under the Development Plan;

(v) review and discuss potential Targets for consideration as potential New Research Programs;

(vi) consider, discuss and make recommendations with respect to proposals for New Research Programs;

(vii) discuss Atara's regulatory strategy for IND filing for CTL Products;

(viii) validate and back up the intellectual property strategy;

(ix) review and track publications and proposed publications, and coordinate review and comments on proposed publications by each Party;

(x) establish subcommittees, as appropriate, and support the operation of such subcommittees, including by seeking to resolve disputed matters that may arise at the subcommittees;

(xi) assume a general role of leadership in the collaboration; and

(xii) perform any and all tasks and responsibilities that are expressly attributed to the JSC under this Agreement.

Notwithstanding the foregoing roles and responsibilities, unless expressly set forth in this Agreement or the License Agreement, the JSC shall serve solely as a forum for information exchange with respect to any matters that relate to (i) regulatory matters, including the regulatory strategy and filings for Regulatory Approvals in the Territory, (ii) commercialization of CTL Products (whether or not arising out of this Agreement), (iii) changes to the Budget for activities under the Development Plan with respect to Allogeneic CTL Programs or New Research Programs, and (iv) subject to Article 13 of the License Agreement, intellectual property strategy, including prosecution, maintenance and enforcement activities.

(c) Frequency of Meetings. The JSC shall meet at least once per quarter or more or less often as otherwise agreed by the Parties, and such meetings may be conducted by telephone, videoconference or in person as determined by the co-chairs, provided that no less than

two (2) meetings during each calendar year shall be conducted in person. As appropriate, and provided that not less than two (2) business days' prior written notice has been given to the other Party, other employees of the Parties may attend Joint Steering Committee meetings as observers, but a Party shall not bring a Third Party to a meeting without the other Party's prior consent. Each Party may also call for special meetings of the JSC with reasonable prior written notice (it being agreed that at least five (5) business days shall constitute reasonable notice) to resolve particular matters requested by such Party and within the decision-making responsibility of the JSC. Each co-chair shall ensure that its JSC members receive adequate notice of such meetings. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

(d) Subcommittees. The JSC may establish and disband such subcommittees as deemed necessary by the JSC. Each such subcommittee shall consist of the same number of representatives designated by each Party, which number shall be mutually agreed by the Parties. Each Party shall be free to change its representatives on written notice to the other Party or to send a substitute representative to any subcommittee meeting. Each Party's representatives and any substitute for a representative shall be bound by the obligations of confidentiality set forth in Article 6. Except as expressly provided in this Agreement, no subcommittee shall have the authority to bind the Parties hereunder and each subcommittee shall report to the JSC. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

(e) Cooperation. Each Party shall provide the JSC such information as required under the Development Plan, or as reasonably requested by the other Party and reasonably available, relating to the progress of the goals or performance of activities under the Development Plan.

(f) Decisions. Other than as set forth herein, in order to make any decision required of it hereunder, the JSC must have present (in person, by videoconference or telephonically) at least the co-chair of each Party (or his/her designee for such meeting). Decisions of the JSC shall be by consensus, with each Party having one (1) vote. If the JSC cannot reach consensus or a dispute arises which cannot be resolved within the JSC within [***], the co-chair of either Party may cause such dispute to be referred to the Designated Executive Officers for resolution within [***]. In the event that consensus cannot be reached with respect to a decision after a meeting of the Designated Executive Officers, then, if the decision relates to (A) commercialization of any CTL Product, New CTL Product or [***] that has been included within the License Agreement pursuant to Section 2.3(d), including regulatory strategy for any such CTL Products, New CTL Products or [***] , (B) changes to the Development Plan that would require a material change in the scope of activities for any Program thereunder, or an increase in the Budget for development activities relating to the Allogeneic CTL Programs or the Autologous CTL Programs, including any increase in the Budget pursuant to this Agreement (where Atara has not previously authorized such increase), or (C) the scope of research and development activities under, or budget for, any New Research Program, including whether or not to include such New Research Program within the Research Collaboration, the final decision will be made by [***]. If a dispute arises which cannot be resolved by a subcommittee, the co-chair of either Party may cause such dispute to be referred to the JSC for resolution.

(g) Exceptions. Notwithstanding the foregoing, (i) [***] may not use its final decision making authority to require [***] to the Research Collaboration, without [***] prior written consent, and (ii) neither Party in exercising its right to finally resolve a dispute pursuant to Section 3.3(f) shall have any power to (A) cause the other Party to violate any Applicable Law or to breach any agreement between such other Party and any Third Party, or (B) to amend, modify, or waive compliance with the terms of this Agreement.

(h) Authority. The JSC and any subcommittee shall have only the powers assigned expressly to it in this Article 3 and elsewhere in this Agreement, and shall not have any power to amend, modify or waive compliance with this Agreement. In furtherance thereof, each Party shall retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers or discretion shall be delegated or vested in the JSC or subcommittee unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing.

(i) Discontinuation of JSC. The JSC shall continue to exist until the first to occur of (i) the Parties mutually agreeing to disband the JSC or (ii) until the termination or expiration of the License Agreement.

4. BUDGET; MILESTONES; PAYMENT

4.1 [Reserved]

4.2 **Budget**. Atara shall pay Institute the amounts set forth in the mutually agreed upon budget set forth in Schedule 4.2 (the "Budget"), incorporated herein, to cover all direct and indirect costs of the Allogeneic Programs and EBV Autologous Program and excluding the [***] Programs, for which budget and funding shall be subject to Section 2.6(f) . The Parties may mutually agree upon changes to the Budget or changes in the allocation of the Budget to activities under the Development Plan by mutual written agreement in a document executed by duly authorized representatives of both Parties or otherwise expressly agreed to in writing by the Alliance Managers and representatives on the JSC of both Parties that states that it is effectuating such changes.

4.3 **Changes to the Budget**. During the term of this Agreement, the Parties may discuss, subject to [***] Section 3.3(f) with respect to the Research Collaboration and any New Research Programs other than the [***] Programs, increases to the Budget for the Research Collaboration, which may include, without limitation, increases in the number of Institute FTEs allocated to perform activities hereunder. For clarity, any budget increases for the [***] Programs shall be subject to Section 2.6(f)(iii) . For the avoidance of doubt , the Parties agree that as of the Effective Date, [***].

4.4 **Research Milestones**.

(a) As additional consideration for Institute entering into this Agreement and diligently progressing the activities under the Research Collaboration in accordance with this Agreement, Atara has paid, or will pay to Institute the research milestone payments (each, a "**Research Milestone Payment**") set forth in the table below for each Allogeneic CTL Product and/or Autologous CTL Product (as applicable pursuant to the table set

forth below) to achieve the corresponding milestone (each, a "**Research Milestone**"), whether achieved by Institute, Atara or an Affiliate or sublicensee of Atara. The Party achieving such Research Milestone shall promptly notify the other Party in writing of the achievement of any such Research Milestone and Atara shall pay Institute in full the corresponding Research Milestone Payment within [***] of such achievement. For clarity, each Research Milestone Payment is payable once only for each Allogeneic CTL Product and once for each Autologous CTL Product, and each Research Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute. The Parties acknowledge and agree that as of the Execution Date, Atara has paid the Research Milestone Payment for First Dosing in a Human Subject for a CTL Product Specifically Directed to EBV for a first Allogeneic CTL Product.

	Research Milestone Trigger Event	**Research Milestone Payment**	
		CTL Product Specifically Directed [***]	**Licensed Product Arising Directly From Activities under New Research Programs**
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]

*Milestone payable only once with respect to each Allogeneic Licensed Product to achieve such Milestone.

**Milestone payable once for each Allogeneic CTL Product and for each Autologous CTL Product to achieve such Research Milestone.

(b) As consideration for Institute entering into this Agreement and diligently progressing the activities under the Research Collaboration with respect to the [***] Programs in accordance with this Agreement, Atara:

(i) paid to Institute a fixed fee of two million five hundred thousand dollars ($2,500,000) within fifteen (15) business days following the Original Effective Date (which fee is non-refundable and non-creditable against any other amounts due under this Agreement), and

(ii) will pay to Institute the following milestone payments with respect to research and development activities conducted under the [***] Program (each, a "[***] **Milestone Payment**") set forth in the table below for each [***] to achieve the corresponding milestone (each, a "[***] **Milestone**"), whether achieved by Institute, Atara or an Affiliate or sublicensee of Atara. The Party achieving such [***] shall promptly notify the other Party in writing of the achievement of any such [***] Milestone and Atara shall pay Institute in full the corresponding [***] Milestone Payment within thirty (30) days of such achievement. For clarity, each [***]Milestone Payment is payable once only for the first [***] to reach the applicable milestone event, and each [***] Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute.

	[***] Milestone Trigger Event	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]

(c) Unless a Research Milestone Payment or [***] Milestone Payment is specified as payable for more than one Indication in the tables in (a) and (b) above respectively, each Research Milestone Payment and [***] Milestone Payment will be payable by Atara only once, following the first time a given CTL Product or [***], as applicable, developed under this Agreement achieves the specified Research Milestone or [***] Milestone. For example, with respect to the Research Milestone Payments, Research Milestone 2 in the table above shall be payable for a given Allogeneic CTL Product upon [***], but shall not be payable for such Allogeneic CTL Product for any subsequent [***].

(d) Each time a Research Milestone or [***] Milestone (as applicable) is achieved, then any other Research Milestone Payments with respect to earlier Research Milestones or [***] Milestone Payments with respect to earlier [***] Milestones that have not yet been paid will be due and payable together with the Research Milestone Payment for the Research Milestone, or [***] Milestone Payments for the [***] Milestone, as applicable, that is actually achieved.

(e) If, with respect to a given CTL Product developed or commercialized under this Agreement or the License Agreement and a given Indication, Atara elects to progress the development and commercialization of an Autologous CTL Product in lieu of an Allogeneic CTL Product for such Indication, then (i) following the decision to progress development and commercialization of such Autologous CTL Product, Atara shall owe all subsequent Research Milestone Payments due for such Autologous CTL Product, and (ii) subsection (c) shall apply solely with respect to any Research Milestone Payments that are

applicable to both Autologous CTL Products and Allogeneic CTL Products, and have not already been paid for the Allogeneic CTL Product.

4.5 **Other Payments**.

(a) Atara shall pay any amounts agreed to by Atara and included in the Budget to Institute on a Calendar Quarterly basis in advance, based on the allocation of such amounts to activities under the Development Plan for the applicable Calendar Quarter. Institute shall submit invoices to Atara on a Calendar Quarterly basis, no later than [***] prior to the last day of each Calendar Quarter, setting forth the amounts payable for the upcoming Calendar Quarter and the activities to which such amounts are allocated under the Development Plan. The first invoice shall be due under this Agreement no later than [***] following the Original Effective Date. Each invoice shall be signed by an authorized official of Institute. Atara shall make payment by wire transfer to Institute's nominated bank account.

(b) Atara shall pay the [***] Research Contribution (and any other amounts agreed to by Atara and included in the [***] Budgets) as set forth in Section 2.6(c) and (d) of the License Agreement.

5. **PRINCIPAL INVESTIGATOR AND PERSONNEL**

5.1 **Principal Investigator.** For the purpose of this Agreement and pursuant to Institute policy, Principal Investigator shall be responsible for the administration, direction, and content of the Research Collaboration, including expenditures under the Budget, and revisions to the allocation and individual expenditures within the overall framework, and subject to the overall cap, of the Budget, in each case necessary to accomplish the Research Collaboration. Should the Principal Investigator leave Institute or otherwise become unavailable during the term of this Agreement, Institute may nominate a replacement. In the event that the Principal Investigator becomes unable or unwilling to continue the Research Collaboration, and a substitute reasonably acceptable to Atara is not available, Atara shall have the right to terminate the Research Collaboration and this Agreement by giving written notice to Institute.

5.2 **Other Commitments.** Except as otherwise agreed, it is further understood that Institute and the personnel performing the Research Collaboration may be or become involved in other activities and projects which entail commitments to other Third Parties ("**Other Work** "). The Principal Investigator and the personnel performing the Research Collaboration will use Commercially Reasonable Efforts to progress the Research Collaboration in accordance with terms of the Development Plan, including any timelines set forth therein. Institute and the personnel performing the Research Collaboration will each use their best efforts to avoid conflicts with the terms and obligations of this Agreement. The Principal Investigator will provide Atara with written notice as soon as practicable if he becomes aware of a conflict or potential conflict that may materially impose upon his ability to perform activities under the Development Plan and this Agreement. Nothing in this Agreement shall be construed to limit the freedom of Institute, or their researchers who are not participants in the Research Collaboration under this Agreement, from engaging in Other Work made under other agreements with other parties than Atara. Notwithstanding the foregoing, Institute and the Principal Investigator shall use all reasonable efforts to distinguish the research performed in connection with the Research Collaboration under

this Agreement from all Other Work, and shall keep records pertaining to such Other Work separately from the records to be maintained pursuant to Article 8.

6. CONFIDENTIALITY

6.1 **Confidential Information**. Atara and Institute will treat and maintain the other Party's Confidential Information in confidence using at least the same degree of care as the receiving Party uses to protect its own proprietary and confidential information of a like nature from the date of disclosure until [***] after the termination or expiration of this Agreement, provided that a Party may designate one or more specific, defined items of Confidential Information as 'Trade Secret', by giving written notice to the other Party briefly outlining its reasons why longer protection is warranted, and in such case the other Party shall protect such information indefinitely unless and until Section 6.4 applies. Confidential Information can be written, oral, or both.

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

6.3 **Permitted Disclosure**. Atara and Institute may use and disclose the other Party's Confidential Information to their Affiliates, employees, agents, consultants, contractors, and, in the case of the Atara, its Sublicensees, in each case on a need to know basis for the purposes of such Affiliates, Sublicensees and Third Parties performing activities under this Agreement or the License Agreement, provided that such parties are bound by a like duty of confidentiality as that found in this Article 6. Furthermore, Atara may disclose Institute's Confidential Information to: (a) Atara's potential or actual collaborators, partners, licensees and Sublicensees, and (b) potential or actual investment bankers, acquirers, lenders or investors, and (c) advisors of Atara or any of the foregoing in (a) and (b); each of whom, prior to disclosure, must be bound by similar obligations of confidentiality and non-use as set forth in this Article 6.

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

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

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

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

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

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

6.6 **Return of Information**. Upon expiration or termination of this Agreement (unless the License Agreement remains in effect), or the request of the disclosing Party, if earlier, Atara and Institute will destroy or return any of the disclosing Party's Confidential Information in its possession within [***] following the termination of this Agreement and provide each other with prompt written notice that such Confidential Information has been returned or destroyed. Each Party may, however, retain one (1) copy of such Confidential Information for archival purposes in non-working files. If the License Agreement remains in effect as of the date of termination or expiration of this Agreement, then all Confidential Information disclosed pursuant to this Agreement, if not returned or destroyed at the disclosing Party's request pursuant to this Section 6.6, shall be deemed Confidential Information subject to the terms and conditions of Article 22 of the License Agreement.

7. PUBLICATION

7.1 **Publication.** Either party, consistent with academic standards, may publish or present the Data (as defined in Article 8 below), provided such publication or presentation does not disclose the other party's Confidential Information. The Parties agree that any publication or presentation of Data shall appropriately cite the contributions of both Parties, using customary standards of scientific attribution. Each Party shall provide the other Party with a copy of such publication or presentation [***] prior to submission for presentation or publication to permit protection of any Confidential Information and/or patent rights, if desired and applicable. The other Party shall have [***], after receipt of said copies, to object to such proposed presentation or proposed publication because it includes patentable subject matter which needs protection or because it includes Confidential Information of such other Party. In the event that the other Party makes such objection, the publishing party shall refrain from making such publication or presentation for a maximum of [***] from date of receipt of such objection in order to allow the other Party to seek patent protection on any patentable Inventions included in the proposed publication or presentation, and the publishing Party shall remove the other Party's Confidential Information from such publication or presentation before submitting or presenting it to any Third

Party. Atara further agrees that Institute shall have the first right to publish any results of the Research Collaboration, pursuant to the terms of this Article 7. In the case of Confidential Information of Atara being results of the Research Collaboration, Institute may publish a publication or presentation containing such information after taking into account any comments by Atara in good faith and after allowing Atara to seek patent protection in accordance with this Section 7.1, unless Atara (acting reasonably) designates such information as a 'Trade Secret'.

7.2 No Use of Names. Neither Party will use the name of the other Party or its employees in any advertisement, press release, or other publicity without prior written approval of the other Party.

8. REPORTS; RIGHTS IN DATA

8.1 **Reporting.** Each Party shall, in accordance with its established practice, keep complete and accurate records of the work performed under this Agreement, including all expenditures under the Budget. Institute shall provide Atara with a written report, prior to any meeting of the JSC, or at such other frequency as is mutually agreed to by the Parties (the "**Interim Reports**"). Such reports shall set forth, at a minimum: (a) the activities performed and to be performed under the Development Plan, (b) results generated during the conduct of the Research Collaboration, (c) any CTL Products or, New CTL Products or [***] identified, (d) the quality and quantity of any materials (including without limitation biological or chemical compounds or raw materials) transferred by either party for the purposes of progressing the Research Collaboration and (e) material expenditures of funds under the Budget, and (f) subject to any obligations of confidentiality to any Third Party, a summary of activities of Atara and its Affiliates relevant to the research and development of CTL Products outside the Research Collaboration, excluding information regarding Atara's activities under the MSK Agreement. Institute shall provide a comprehensive final written report of all activities conducted, and all results and data generated (collectively "**Data**") under the Autologous Programs, the Allogeneic Programs, and any New Research Programs within ninety (90) days after termination of this Agreement ("**Final Report**"). During the course of the Research Collaboration, Atara's representatives may consult informally with the Principal Investigator at his or her discretion and convenience regarding the Research Program. Atara shall also be required to provide Interim Reports in accordance with this Section 8.1, on a Program-by-Program basis: (i) for the Allogeneic Programs, following completion of Phase I Clinical Trials for the applicable Allogeneic Program(s), and (ii) for the Autologous Programs, in consultation with Institute.

8.2 **Rights in Data.** Institute shall own all Interim Reports and the Final Report, and information and data contained therein or arising from the activities conducted under this Agreement and the Development Plan. Subject to the provisions of Articles 6 and 7, Atara shall have the unencumbered right to use the Interim Reports and the Final Report[s], and any and all information and Data contained therein for any and all purposes, including the right to reference such Data and information in any regulatory filings in relation to any CTL Product, New CTL Product or Program [***] under this Agreement or the License Agreement, and shall have the right to grant or sublicense to others the right to so use and reference such Data and information.

9. INTELLECTUAL PROPERTY

9.1 **Ownership.** With the exception of the rights granted to Institute to perform its obligations under this Agreement, and the rights granted to Atara pursuant to the License Agreement, each Party shall retain all right, title and interest in and to its Background IP. Except as provided in Section 9.4, inventorship/authorship of all patents, copyrights, trade secrets and other intellectual property rights, in and to all tangible materials (including without limitation all biological materials), inventions, discoveries, and software conceived or first made in the performance of the Research Collaboration under this Agreement ("**Inventions**") will be determined in accordance with U.S. patent/copyright law, such that all Inventions that are conceived or made solely by one or more employees of Atara in the course of the Research Collaboration and are not Improvements ("**Atara Inventions**") shall be owned solely by Atara and all Inventions which are conceived or made solely by one or more employees of Institute in performance of Research Collaboration and are not Improvements ("**Institute Inventions**") shall be solely owned by Institute.

9.2 **Joint Inventions**. Inventions that are jointly conceived or reduced to practice by one or more employees, consultants or contractors of each Party, shall be jointly owned by the parties (each such invention, a "**Joint Invention**"). Ownership of all Inventions shall vest in the party to whom the inventor has an obligation of assignment. Institute will obtain agreements securing the assignment to Institute of all Inventions and intellectual property rights from the Principal Investigator and all employees, other agents and consultants who perform any part of the Research Collaboration at Institute that are necessary to enable Institute to grant to Atara all rights Institute purports to grant under this Agreement and the License Agreement. Subject to the terms and conditions of the License Agreement, including any exclusive licenses granted thereunder (for such time as such licenses have effect), each Party shall have all rights under any jointly owned patent, patent application or other form of intellectual property protection relating to any Joint Invention to use, research, develop, and commercially exploit such Joint Invention and to license and sublicense Third Parties (through multiple tiers of sublicensing) to do so.

9.3 **Inclusion within the License Agreement** . All Institute Inventions arising under this Agreement shall be automatically included, upon their creation, within the Patent Rights and Know-How Rights under the License Agreement, and shall be subject to the terms and conditions of the License Agreement, provided that for clarity, Atara shall only have rights to practice under any such Institute Inventions in relation to [***] of the License Agreement.

9.4 **Improvements to Background IP**. Notwithstanding Sections 9.1 and 9.2, Institute shall be the sole owner of any Inventions that are claimed or covered by patents and patent applications claiming priority to any patent or patent application included in the Patent Rights, as such Patent Rights exist as of the Original Effective Date (such Inventions, the "**Institute Background IP Improvements**"). Atara shall assign, and hereby assigns to Institute, all of Atara's right, title and interest in and to the Institute Background IP Improvements. Without limiting the foregoing, Institute Background IP Improvements shall be included, upon their creation by either Party (or assignment by Atara to Institute in accordance with this Section 9.4, if applicable), within the Patent Rights, and shall be subject to the terms and conditions of the License Agreement, including the licenses granted therein.

9.5 **Option to License Atara IP**. In addition to such rights of reversion as are contained in the License Agreement, Atara will, prior to granting or offering to grant to any Third Party any license or other right to research, develop or commercially exploit any Atara Invention, first discuss with Institute in good faith for a period of not less than [***] whether, and on what terms, Institute may wish to use or license such Atara Invention in fields or applications not the subject of the License Agreement.

9.6 **Disclosure**. Institute will require the Principal Investigator and other investigators to promptly disclose all Inventions and Joint Inventions generated during the term of this Agreement to Institute's Business Development Office in accordance with Institute policy with respect to ownership and disclosure of Inventions (and Joint Inventions). Institute or the Business Development Office of Institute, as applicable, will notify Atara promptly in writing following disclosure of a Institute Invention by any inventor, and disclose in confidence to Atara all Institute Inventions, including sufficient detail to enable Atara to evaluate such Institute Invention.

9.7 **Patent Filings**.

(a) Joint Inventions. Institute will use reasonable efforts to ensure that Atara has the first opportunity to file a patent application or application for other intellectual property protection on any Joint Inventions. Institute's rights in any Joint Invention shall be automatically included within the Know-How Rights or the Patent Rights, as applicable, under the License Agreement, and shall be subject to all of the terms and conditions of the License Agreement. Atara's prosecution and maintenance of any patents and patent applications arising from Joint Inventions shall be conducted in accordance with Section 13.2 of the License Agreement. If Atara elects not to file a patent application or application for other intellectual property protection on any Joint Inventions, or decides that it does not wish to provide financial support for the prosecution or maintenance of the protection for such Joint Inventions, Institute shall thereafter be free to file or continue prosecution or maintain any such application(s), and to maintain any protection issuing thereon in the U.S. and in any foreign country at Institute's sole expense and with no further obligation to Atara, and such patent or patent application shall not be included within the Patent Rights under the License Agreement.

(b) Inventions. Section 13.2 of the License Agreement shall apply to all filing, prosecution and maintenance of any patents and patent applications arising from Institute Inventions and Institute Background IP Improvements. Atara shall have the sole right, but not the obligation to file, prosecute and maintain patents and patent applications arising from the Atara Inventions.

9.8 Except as expressly provided herein or in the License Agreement, nothing contained in this Agreement shall be deemed to grant either directly or by implication, estoppel, or otherwise any license under any patents, patent applications, or other proprietary interests to any other invention, discovery, or improvement of either Party.

10. **EXCHANGE OF MATERIALS**

All materials, including any CTLs, including progeny and modified or unmodified derivatives, exchanged pursuant to this Agreement shall remain the property of the providing Party and shall be used solely for the purposes of the Research Collaboration, unless otherwise mutually agreed in writing. Upon expiration or termination of this Agreement, the unused portions of such materials will be returned promptly to the providing Party or will be disposed of as directed by the providing Party in writing.

11. **SUPPLIES AND EQUIPMENT**

In the event that Institute purchases supplies or equipment under the Budget for the Research Collaboration, title to such supplies and equipment shall vest in Institute, unless the Parties mutually agree otherwise in writing.

12. **INDEMNIFICATION**

12.1 **Atara Indemnification**. Atara agrees to indemnify, defend and hold harmless Institute and its trustees, officers, staff, representatives and agents ("**Institute Indemnitees**") against all damages, costs, expenses, losses and liabilities ("**Losses**") actually awarded by a court of competent jurisdiction or agreed in settlement, as a result of any third party claims, demands, suits, or other actions ("**Claims**") arising from (a) Atara's use of the Data or Inventions in connection with Atara's activities pursuant to the License Agreement, including the development and commercialization of CTL Products and any New CTL Products and Program [***] (in each case, if applicable), (b) Atara's breach of this Agreement or the Development Plan (including without limitation Atara's breach of its representations and warranties), (c) the negligent or wrongful acts or omissions or of any Institute officer, agent, or employee the negligent or intentional acts or omissions or breach of this Agreement (including without limitation Atara's breach of its representations and warranties) by Atara and its officers, agents, and employees; provided that Atara will have no obligation to indemnify Institute Indemnitees to the extent that any such Claim is based on Institute's negligence, willful misconduct or breach of this Agreement (including without limitation Institute's breach of its representations and warranties).

12.2 **Institute Indemnification**. Institute agrees, to the extent permitted by law, to indemnify, defend and hold harmless Atara and its stockholders, officers, staff, representatives and agents ("**Atara Indemnitees** ") against all Losses actually awarded by a court of competent jurisdiction or agreed in settlement, as a result of any Claims arising from (a) any activities related to the [***] Program occurring after June 30, 2019 and (b) any other CMV-related activities of Institute following the Execution Date; provided that Institute will have no obligation to indemnify Atara Indemnitees to the extent that any such Claim is based on Atara's negligence, willful misconduct or breach of this Agreement (including without limitation Atara's breach of its representations and warranties).

13. **NOTICE**

Except for the remittance of payments due pursuant to the terms hereof, whenever any notice is to be given hereunder, it shall be in writing and shall be deemed received, if delivered by

courier on a business day, on the day delivered, or on the second business day following mailing, if sent by first-class certified or registered mail, postage prepaid, to the following addresses:

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

Atara: **Atara Biotherapeutics, Inc.**
611 Gateway Blvd. #900
South San Francisco, CA 94080
Attn: General Counsel

14. DISPUTE RESOLUTION

14.1 **Executive Resolution**. The parties shall initially seek amicably to settle all disputes (each, a "**Dispute**") arising out of or in connection with this Agreement (including any Dispute relating to Development Plan and performance of activities thereunder) by negotiation, including discussion at the JSC, subject to the Parties' respective final decision making authority as set forth in Section 3.3(f). If, within [***] after written notice by either Party of the existence of a dispute, the Parties do not resolve such Dispute, then the Dispute shall be referred by the JSC to the Executive Officers from each Party for further negotiation. If the Designated Executive Officers of each Party cannot resolve such Dispute, then subject to Sections 3.3(f) and 14.7, such Dispute will be referred to final binding arbitration in accordance with Sections 14.2 through 14.6.

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

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

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

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

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

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

15. TERM AND TERMINATION

15.1 **Term**. This Agreement shall be effective from the Original Effective Date until all Research Milestone Payments under Section 4.4 have been paid, (the "**Term**"), unless earlier terminated in accordance with this Article 15.

15.2 **Termination of License Agreement**. This Agreement will terminate automatically in the event that the License Agreement is terminated, provided that prior to such termination of this Agreement becoming effective, the Parties shall cooperate to wind down the activities being conducted hereunder as set forth in Section 15.5(b).

15.3 **Termination for Failure of the Research Collaboration.** This Agreement may be terminated by Institute or Atara at any time upon the giving of thirty (30) days' prior written notice to the other if either party determines, in its discretion, that the Research Collaboration is no longer academically, technically, or commercially feasible.

15.4 **Termination for Material Breach**. In the event that either party materially breaches any of its obligations under this Agreement and shall fail to remedy such default within thirty (30) days after written notice thereof, the party not in default shall have the option of terminating this Agreement by giving written notice of termination with an immediate effect to the defaulting party.

15.5 **Effects of Termination.** Following termination, but not expiration of this Agreement, the following shall apply:

(a) Termination of this Agreement shall not affect the rights and obligations of the parties accrued prior to termination.

(b) Promptly following any notice of termination of this Agreement, the Parties shall meet, through the JSC, to discuss and agree upon the steps to be taken to wind down the activities being conducted under the Research Collaboration, (the "**Wind Down Activities**"). Unless requested in writing by Atara, agreed by the Parties to be included within the budget for any Wind Down Activities, or already committed to be paid by Institute on a non-cancelable basis prior to the date of notice of termination, Institute shall not incur any additional costs or expenses in conducting activities under this Agreement following the date of notice of termination. Atara agrees to reimburse Institute for (i) any non-cancelable obligations actually incurred by Institute prior to termination in accordance with the Research Collaboration, provided such amounts have been incurred in accordance with the Budget, and (ii) any costs incurred in relation to the Wind Down Activities thereunder as mutually agreed by the JSC. Following wind-down of the Research Collaboration, Atara shall have no further obligations to make any payments to Institute.

(c) All materials, information and data, including any Confidential Information, provided by one Party to the other Party pursuant to this Agreement shall be returned to the disclosing Party as set forth in Section 6.6 and Article 10.

(d) The Parties' rights in CTL Products, New CTL Products and [***] arising from the conduct of activities under this Agreement prior to the effective date of termination shall be subject to Sections 9.6(b), (c), (e), (f), (g) and (i), 9.7 and 9.9 of the License Agreement.

15.6 **Survival.** Upon termination or expiration of this Agreement, any provisions herein which are intended to continue and survive such termination or expiration, including Articles 1, 6, 7, 8, 9, 10, 12, 13, 14 and 16 through 23, and Sections 4.4 (to the extent that the License Agreement has not expired or terminated, and subject to Section 9.6(b) of the License Agreement) and 15.5 shall survive any expiration or termination of this Agreement.

16. APPLICABLE LAW

This Agreement shall be governed by the laws of the State of New York without regard to the conflict of law principles thereof. Any disputes arising hereunder shall be adjudicated accordance with Article 14.

17. WAIVER

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

18. ASSIGNMENT

Neither party hereto may assign or transfer any rights or obligations under this Agreement without the prior written consent of the other party, except that no such consent shall be required

for a party to assign its rights or transfer its obligations to its Affiliates or in connection with the sale or transfer of the majority of its stock or all or substantially all of its assets to which this Agreement relates, whether as part of a merger, acquisition, or asset sale. Any assignment in violation of this Agreement will be null and void. This Agreement benefits and binds the parties and their respective successors and permitted assigns.

19. **ENTIRE AGREEMENT**

This Agreement, together with the License Agreement, any Manufacturing Agreement executed by the Parties, and any Exhibits to any of the foregoing, represents the entire understanding of the Parties and supersedes any prior or contemporaneous agreements or understandings between Principal Investigator or Institute with Atara with respect to the subject matter hereof, including the Original Research Agreement, the First Restated Agreement, the Second Restated Agreement, and the Third Restated Agreement. Furthermore, no modification, supplement, or new agreement may be executed, prior to the expiration of this Agreement, between Institute and Atara with respect to the subject matter hereof, without formal written amendment to this Agreement, signed by all Parties.

20. **INDEPENDENT CONTRACTOR**

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

21. **SEVERABILITY**

If any one or more of the provisions contained in this Agreement shall be held invalid, illegal, or unenforceable for any reason or in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions hereof, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

22. **CONSTRUCTION**

The headings of the Sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement. Except where the context otherwise requires, wherever used, the use of any gender will be applicable to all genders, and the word "or" is used in the inclusive sense. When used in this Agreement, "including" means "including without limitation". References to either Party include the successors and permitted assigns of that Party. The Recitals are incorporated by reference into this Agreement. The headings of this Agreement are for convenience of reference only and in no way define, describe, extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement. The Parties have each consulted counsel of their choice regarding this Agreement, and, accordingly, no provisions of this Agreement will be construed against either Party on the basis that the Party drafted this Agreement or any provision thereof. The official text of this Agreement, any notice given or accounts or statements required by this

Agreement, and any dispute proceeding related to or arising hereunder, will be in English. If any dispute concerning the construction or meaning of this Agreement arises, then reference will be made only to this Agreement as written in English and not to any translation into any other language.

23. **COUNTERPARTS**.

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

IN WITNESS WHEREOF, the undersigned have entered into this Fourth Restated Agreement as of the date first set forth above.

Agreed and Accepted By:

Atara Biotherapeutics, Inc.:

By: /s/ Jakob DuPont
Name: Jakob DuPont
Title: Head of R&D

The Council of the Queensland Institute of Medical Research:

By: /s/ Lee Bruce
Name: Lee Bruce
Title: Chief Operating Officer

SCHEDULE 1.15

FTE RATES*

[***]

SCHEDULE 2.2

DEVELOPMENT PLAN

[***]

SCHEDULE 4.2

BUDGET

[***]

Exhibit 10.38

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

EXECUTION VERSION

FOURTH AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT

between

THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH

and

ATARA BIOTHERAPEUTICS, INC.

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FOURTH AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT

This **FOURTH AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT** ("**Fourth Restated Agreement**") is entered into on December 17, 2021 ("**Execution Date** "), and effective as of the Execution Date, by and between the **COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH** , a not-for-profit Institute organized and existing under the laws of the State of Queensland having its principal offices at 300 Herston Rd, Herston QLD 4006, Australia ("**Institute**"), and **ATARA BIOTHERAPEUTICS, INC.**, a Delaware corporation located at 611 Gateway Blvd #900, South San Francisco, CA 94080 ("**Licensee**"). Each of Licensee and Institute are referred to in this Agreement as a "**Party**" and together, the "**Parties**".

RECITALS

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

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

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

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

WHEREAS, Licensee and Institute are parties to that certain exclusive License Agreement (the "**Original License Agreement**"), entered into on October 20, 2015 (the "**Original Effective Date**"), which was amended and restated as of September 23, 2016 (the "**First Restatement Date**") pursuant to that certain Amended and Restated Exclusive License Agreement (the "**First Restated Agreement**") effective as of the Original Effective Date, which was amended and restated for a second time as of August 28, 2019 (the "**Second Restatement Date**") pursuant to

that certain Second Amended and Restated Exclusive License Agreement (the "**Second Restated Agreement**"), which was amended and restated for a third time as of August 26, 2020 ("**Third Restated Date**") pursuant to that certain Third Amended and Restated Exclusive License Agreement and was subsequently amended on April 21, 2021 to change the HPV CTL Program to the HPV TCR Program (as so amended, the "**Third Restated Agreement**"), and now the Parties desire to amend and restate the Third Restated Agreement in its entirety to, among other things, [***], all as set forth in this Fourth Restated Agreement; and

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

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

1. **DEFINITIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.23 "**Comparable Third Party Product**" means, on a Licensed Product-by-Licensed Product basis, and a country-by-country basis, any pharmaceutical or biological product (a) that contains (i) an identical active ingredient(s) as a Licensed Product, or (ii) a "highly similar" active ingredient(s) as such Licensed Product, as the phrase "highly similar" is used in 42 U.S.C. § 262(i)(2), and subject to the factors set forth in FDA's Guidance for Industry, "Quality Considerations in Demonstrating Biosimilarity to a Reference Protein Product," (February 2012), at Section VI, and any successor FDA guidance thereto, (b) for which Regulatory Approval is obtained by reference to Regulatory Materials of such Licensed Product, (c) is approved for use in such country pursuant to a Regulatory Approval process governing approval of interchangeable or biosimilar biologics as described in 42 U.S.C. §§ 262, or an equivalent process for Regulatory Approval in any country outside the United States, or any other equivalent provision that comes into force, or is the subject of a notice with respect to such Licensed Product under 42 U.S.C. § 262(l)(2) or any other equivalent provision that comes into force in such country, and (d) is sold in the same country as such Licensed Product by any Third Party that is not a Sublicensee of Licensee or its Affiliates and did not purchase such product in a chain of distribution that included any of Licensee or any of its Affiliates or its Sublicensees.

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

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

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

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

1.28 "**CTL Product**" means a pharmaceutical or biologic product comprising Autologous CTLs or Allogeneic CTLs, in either case, Specifically Directed to one or more Targets

associated with EBV, [***] associated with EBV or expressed by a cell infected with EBV (an "**EBV-Specific CTL Product**"), including without limitation any [***] to two or more of any of the foregoing Targets.

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

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

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

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

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

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

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

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

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

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

1.39 "**EBV** [***]" means any [***], in whole or in part, or in any form, with or without [***] and in any formulation, including without limitation any such [***] that is also a

[***], for use for (a) [***] EBV, or any [***] associated with EBV or [***] EBV, or (b) [***] EBV, or any [***]EBV, in each case or (a) or (b), [***] .

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

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

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

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

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

1.45 "**HPV-Specific TCR Product**" means a pharmaceutical or biologic product comprising TCRs, Specifically Directed to one or more Targets associated with human papilloma virus ("**HPV**"), including [***] associated with HPV or [***] with HPV.

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

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

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

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

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

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

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

1.53 "**Know-How Rights**" means the know-how and any supplemental information, including concepts, ideas, sequences, formulas, protocols, procedures, techniques and data (a) Controlled by Institute as of the Execution Date (including any of the foregoing Controlled

by Institute as of the Original Effective Date, First Restatement Date, Second Restatement Date) , and/or Third Restatement Date, or (b) Controlled by Institute at any time during the Term and arising [***], or (c) Controlled by Institute and arising from activities conducted by either Party pursuant to the Research Agreement, in each case of (a) through (c), that (i) covers or relates to CTL Technology; and (ii) is not covered by a Valid Claim of the Patent Rights, or, if the subject of a patent or patent application in Patent Rights, does not issue as a Valid Claim.

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

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

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

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

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

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

any of the foregoing claim direct or indirect priority, in each case including any joint interest in such rights held jointly with Institute.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.77 "**Orphan Drug Exclusivity**" means in a particular country with respect to a Licensed Product, protection available under any Applicable Law relating to treatments for rare or neglected diseases or conditions, or otherwise requiring special incentives, that prevents or delays (notwithstanding any exceptions or provisos, save to the extent that such exceptions or provisos may be applied in the particular case) the approval, production, marketing or sale of a

competitive product by a Third Party, where such Third Party has not obtained the rights to market or sell such product as a licensee, sublicensee or distributor of Licensee or any of its Affiliates, licensees or Sublicensees with respect to such product.

1.78 "**Participant**" means any one or more of:

[***].

1.79 "**Patent Rights**" means (a) any and all patents and patent applications Controlled by Institute as of the Execution Date (including all such patents and patent applications Controlled by Institute as of the Original Effective Date, the First Restatement Date, the Second Restatement Date, and/or the Third Restatement Date) that cover or claim CTL Technology and have arisen directly from activities conducted by or under the supervision of [***], including the patents and patent applications listed on Schedule 1.79, excluding any patents and patent applications included in subsection (b), (b) any and all patents or patent applications Controlled by Institute that cover or claim inventions created, discovered, conceived, developed or reduced to practice in the course of activities conducted pursuant to the Research Agreement, and (c) any and all patents and patent applications Controlled by Institute during the Term that have arisen directly from activities conducted by or under the supervision of [***] to the extent that such patents and patent applications cover or claim [***]. For clarity, Patent Rights include the following forms of intellectual property rights anywhere in the world that fall within (a), (b) and (c): issued patents, continuations, continuations-in-part, divisionals, substitutions, confirmations, reissues, re-examination, validations, extensions, renewals, restorations or any similar governmental grant for protection of inventions; (ii) pending applications for any of the foregoing (including both provisional and non-provisional applications); and (iii) all patents and patent applications claiming priority directly or indirectly to any of the foregoing, or from which any of the foregoing claim direct or indirect priority.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.100 "**Territory**" means worldwide.

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

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

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

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

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

1.106 "[***]" means [***].

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

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

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

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

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

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

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

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

2. GRANT

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

purchase and use, for any uses, including without limitation, clinical or commercial purposes, all [***], including without limitation, the [***] that is used for the production and/or manufacturing of [***] ("[***]"); and (ii) optimize, modify, manufacture, or purchase any [***], including without limitation, [***], from any third parties, including without limitation, [***], for any and all uses.

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

2.2 **Autologous CTL Option**.

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

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

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

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

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

(a) Subject to the terms and conditions of this Agreement, and the Research Agreement, during the Term, Licensee shall have [***] under any intellectual property rights (i) Controlled by Institute or any Affiliate of Institute not included in the Patent Rights or the Know-How Rights, (ii) [***], (iii) that [***] or to [***], and (iv) that either Party [***] for the Parties' activities under this Agreement or the Research Agreement (the "[***]**Technology**"). For

clarity, this Section 2.4 shall not apply to any [***] Technology that relates solely to [***], which shall be subject to Section 2.6 during the [***] Period, provided that if the [***] Period expires without Licensee exercising the [***], this Section 2.4(a) shall continue to apply, but Institute shall have no obligation under this Section 2.4 with respect to any such [***] Technology that relates solely to [***] arising from the [***] Program.

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

2.5 **Reservation of Rights**.

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

associated with any [***] such uses or applications of CTLs, and (iv) [***], excluding any [***] included in the [***] Program, which shall be subject to Section 2.6, or any [***] that is also directed to the Target of any New Research Program.

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

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

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

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

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

failure by Licensee to pay the [***] Contribution (unless disputed in good faith by Licensee) within the timeframe set forth in Section 2.6(d) [***] and upon written notice from Institute to Licensee shall [***] for the [***] Program.

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

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

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

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

(g) Notwithstanding subsection (f), following either (i) the expiration of the [***] Period without exercise of the [***] by Licensee for the [***] Program, (ii) termination by Licensee of the [***] for the [***] Program or (iii) at any time with respect to the [***] Program, as set forth below, if Institute grants rights to any Third Party to develop or commercialize any product (including any [***]) arising from the [***] Program and/or the [***] Program, Institute shall [***] under any agreement for the grant of such rights, until [***] (i) with

respect to the [***] Program, the [***] Contribution paid by Licensee during the [***] Period (up to and including the effective date of termination or expiration of the [***]) with respect to the [***]Program for which rights have been granted to such Third Party and (ii) with respect to the [***] Program, [***]. For clarity, Licensee may terminate the [***] by (A) the giving of [***] written notice to Institute in accordance with Section 2.6(b), or (B) written notice in the event of (1) any issue relating to the safety or efficacy of the [***], or (2) a change in the regulatory framework or other laws applicable to the development and commercialization of the [***], or (3) [***].

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

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

3. SUBLICENSES

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

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

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

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

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

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

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

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

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

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

4. FINANCIAL PROVISIONS

4.1 Issue Fee.

(a) As initial payment for the rights received under this Agreement with respect to CTL Products, Licensee paid to Institute a fixed fee of three million dollars ($3,000,000) (the "**Issue Fee**") within fifteen (15) business days following the Original Effective Date. The Issue Fee is non-refundable and non-creditable against any other amounts, including but not

limited to, Earned Royalties due to Institute by Licensee. The Issue Fee is in no way contingent on use or productivity of Patent Rights and Know-How Rights provided by Institute.

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

(c) As initial payment for [***], Licensee paid to Institute [***] within fifteen (15) business days [***].

4.2 **Option Fees**.

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

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

4.3 **Milestone Payments**.

(a) As additional consideration for Institute entering into this Agreement and the Research Agreement, Licensee will pay to Institute the milestone payments (each, a "**Milestone Payment**") set forth in the table below for each Allogeneic Licensed Product and/or Autologous Licensed Product (as applicable pursuant to the table set forth below) to achieve the corresponding milestone (each, a "**Milestone**"), whether achieved by Licensee or an Affiliate or Sublicensee. Licensee shall promptly notify Institute in writing of the achievement of any such Milestone and Licensee shall pay Institute in full the corresponding Milestone Payment within [***] of such achievement. For clarity, each Milestone Payment is payable once only for each Allogeneic CTL Product and once for each Autologous CTL Product, except with respect to Milestone Trigger Event 1, which is payable once only for the first Allogeneic CTL Product, and each Milestone Payment is non-refundable, and is not an advance against royalties due to Institute or any other amounts due to Institute.

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

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

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

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

4.4 **Milestone Offset**. If Licensee [***], that it is necessary to obtain a license (or a sublicense) from any Third Party under (a) any patents or patent applications owned or otherwise controlled by a Third Party that claim or cover [***], including without limitation any specific constructs or variants of such [***], wherever originating, including without limitation any such patents or patent applications owned or otherwise controlled by [***] and/or the [***] (the "[***]"), and/or (b) any patents or patent applications having a priority date prior to the [***] owned or otherwise controlled by any [***] in order to develop, make, have made, use, Sell, offer

for Sale or import any Licensed Product (such licenses, each an "**Additional License**"), and pursuant to such Additional License is required to pay any consideration ([***]) to such Additional Party for development and commercialization of such Licensed Product ("**Additional License Payments**"), then Licensee may offset [***] paid to such Additional Party against [***] payable to Institute under this Agreement or [***] under this Agreement in relation to such Licensed Product or [***] in relation to such Licensed Product after the effective date of such Additional License, [***], provided that Licensee may not offset any Additional License Payments due under the [***] for all Licensed Products in aggregate (the "[***] "). For clarity, Licensee's right to offset Additional License Payments under any Additional License falling within (b) shall be subject to the [***]. Notwithstanding the foregoing, in no event shall the offset of Additional License Payments exceed [***], as applicable, and [***]due to Institute under this Agreement and the Research Agreement. Any Additional License Payments ([***]) in excess of such [***] may be [***] by Licensee and [***], provided that no offset may be taken by Licensee against [***] prior to the effective date of such Additional License.

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

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

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

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

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

in any given calendar year. Any Third Party Royalty Payments in excess of such [***] limit for a given calendar year [***].

4.8 **Royalty Term**.

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

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

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

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

4.10 **Currency**. All consideration due Institute will be payable and will be made in United States dollars by wire transfer to an account designated by Institute. When Licensed Products are Sold for monies other than United States dollars, the Earned Royalties and other consideration will first be determined in the foreign currency of the country in which such Licensed

Products were Sold and then converted into equivalent United States dollars. The exchange rate will be the average exchange rate quoted in *The Wall Street Journal* for the purchase of United States dollars during the last thirty (30) days of the reporting period.

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

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

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

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

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

5. DILIGENCE; REGULATORY ACTIVITIES

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

(a) [***];

(b) [***];

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

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

5.3 **Governance**. The Parties' activities under this Agreement and the Research Agreement shall be overseen by the JSC, as further set forth in Article 3 of the Research Agreement. In the event that the Research Agreement is terminated or expires, the JSC will remain in place and continue to operate as set forth in the Research Agreement to the extent applicable to

activities under this Agreement, including with respect to each Party's final decision making authority as set forth in Section 3.3(f) of the Research Agreement. For the avoidance of doubt, the exercise of such authority by Licensee shall in no way define, affect or diminish the diligence obligations of Licensee hereunder.

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

5.5 **Regulatory Activities**.

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

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

5.6 **Abandonment**. If Licensee decides to abandon, or does in fact abandon, on a Licensed Product by Licensed Product and Major Market-by-Major Market basis the development or commercialization of Licensed Products (including an [***], solely following the

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

6. MANUFACTURE AND SUPPLY

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

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

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

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

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

7. CERTAIN COVENANTS

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

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

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

8. BOOKS AND RECORDS

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

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

notice of its election to inspect and audit the records related to the Earned Royalty due hereunder not less than thirty (30) days prior to the proposed date of review of Licensee's and, if applicable, a Sublicensee's records by Institute's auditors. Should the auditor find any underpayment of Milestones or Earned Royalties by Licensee, Licensee shall (a) promptly pay Institute the amount of such underpayment; (b) shall reimburse Institute for the cost of the audit, if such underpayment equals or exceeds [***]; and (c) provide such auditors with an audit right exercisable within six (6) months after Institute receives the audit report. If the auditor finds overpayment by Licensee, then Licensee shall have the right to deduct the overpayment from any future royalties due to Institute by Licensee or, if no such future royalties are payable, then Institute shall refund the overpayment to Licensee within [***] after Institute receives the audit report. Licensee may designate competitively sensitive information which such auditor may see and review but which it may not disclose to Institute; provided, however, that such designation shall not restrict the auditor's investigation or conclusions.

9. TERM; TERMINATION

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

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

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

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

9.5 **Termination if Patent Rights Challenged**. Institute has the right to terminate this Agreement by providing written notice of termination to Licensee, if Licensee or any of its Affiliates commence, pursue, encourage or support any administrative, judicial or other

similar proceeding to challenge the validity, enforceability or scope of any rights under any Patent Rights, including without limitation by (a) filing a declaratory judgment action in which any such Patent Rights are alleged to be invalid or unenforceable; (b) citing prior art pursuant to 35 U.S.C. §301, filing a request for re-examination of any of such Patent Rights pursuant to 35 U.S.C. §302 and/or §311, or provoking or becoming a party to an interference with an application for any such Patent Rights pursuant to 35 U.S.C. §135; or (c) filing or commencing any re-examination, opposition, cancellation, nullity or similar proceedings against any such Patent Rights in any country.

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

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

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

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

material information, materials and data developed by Licensee solely in connection with Institute's (or its Affiliates or licensees') development, manufacture and commercialization of Reversion Products.

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

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

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

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

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

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

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

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

9.7 **Reversion of Rights**. If Institute obtains rights in any Reversion Product pursuant to this Article 9, Institute will have the rights under such Reversion Product set forth in Section 9.6, provided that if Institute elects to grant a license or sublicense to any Third Party under patent rights or know-how Controlled by Licensee and relating to such Reversion Products (the "**Reversion Product IP**") to develop and commercialize any such Reversion Product, then on a Reversion Product-by-Reversion Product basis, Institute shall pay to Licensee a specified percentage of all consideration of any type received from each such Third Party licensee or sublicensee paid for the grant of such license or sublicense, or sales of products that are claimed or covered by such Reversion Product IP, as set forth in the table below, with the applicable percentage being based on (a) [***], and (b) the [***].

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

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

9.9 **Section 365(n) of the Bankruptcy Code**. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property" as defined under Section 101(35A) of the U.S. Bankruptcy Code to the extent permitted

thereunder. The Parties shall retain and may fully exercise all of their respective rights and elections under the U.S. Bankruptcy Code. Upon the bankruptcy of any Party, the non-bankrupt Party shall further be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property, and such, if not already in its possession, shall be promptly delivered to the non-bankrupt Party, unless the bankrupt Party elects to continue, and continues, to perform all of its obligations under this Agreement.

10. USE OF NAMES AND TRADEMARKS

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

11. REPRESENTATIONS AND WARRANTIES

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

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

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

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

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

11.2 **Certain Institute Representations and Covenants**.

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

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

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

12. LIMITATION OF LIABILITY

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

13. INTELLECTUAL PROPERTY; PATENT PROSECUTION AND MAINTENANCE

13.1 **Intellectual Property Ownership**. With the exception of the rights granted to Licensee pursuant to this Agreement, each Party shall retain all right, title and interest in and to

its Background IP. Ownership of intellectual property and inventions arising as a result of the Parties' activities under the Research Agreement are set forth in Article 9 of the Research Agreement. Except as set forth in the Research Agreement, ownership of intellectual property rights arising out of this Agreement or the Research Agreement shall follow inventorship. Inventorship shall be determined in accordance with United States Patent Law (without regard to any conflict of law principles).

13.2 **Patent Prosecution**.

(a) Institute shall have the first right, and shall use Commercially Reasonable Efforts to diligently prosecute and maintain the Patent Rights existing as of the Original Effective Date and licensed to Licensee hereunder (the "**Base Patent Rights**") at Licensee's expense, using United States based patent counsel of its choice reasonably acceptable to Licensee. Institute will provide Licensee promptly with copies of all relevant documentation so that Licensee will be informed of the continuing prosecution and may comment upon such documentation sufficiently in advance of any initial deadline for filing a response. Institute agrees that it will incorporate any reasonable comments by Licensee in relation to such prosecution activities, provided that with respect to any claims of the Base Patent Rights that relate directly to Licensed Products or the manufacture or use thereof, Licensee shall have the right to make the final decision regarding prosecution of such claims, including the filing of any new claims relating to Licensed Products or the manufacture or use thereof. Licensee agrees that all documentation relating to the prosecution and maintenance of the Patent Rights shall be the Confidential Information of both Parties. Without limiting the foregoing, Institute shall use all reasonable efforts to amend any patent application to include claims reasonably requested by Licensee to protect the products contemplated to be sold under this Agreement and the activities being conducted under the Research Agreement.

(b) Licensee shall have the first right, and shall use Commercially Reasonable Efforts to diligently prosecute and maintain any patents and patent applications arising from activities conducted under the Research Agreement that relate to (i) Allogeneic CTLs or Allogeneic CTL Products, and (ii) Autologous CTL Products that are EBV-Specific CTL Products, and (iii) New CTL Products and Program [***], in each case of (i), (ii) and (iii), provided that such patents and patent applications do not claim priority to any patent or patent application included in the Base Patent Rights (in which case Section 13.2(a) shall apply) (the "**Research Agreement Patent Rights** "), at Licensee's expense, using United States based patent counsel of its choice reasonably acceptable to Institute; provided, however, that Institute shall reimburse Licensee for fifty percent (50%) of all prosecution and maintenance costs (including attorney's fees) incurred by Licensee for the filing, prosecution and maintenance of any patents and patent applications claiming priority to, or having common priority with, PCT Application Number PCT/AU2013/001216 ("Improved Human Herpesvirus Immunotherapy") (including such patent application itself). For clarity, any Patent Rights Controlled by Institute as of the date upon which the Parties mutually agree in writing to include a New Research Program within the Research Agreement, and New CTL Products arising from such New Research Program within the scope of

this Agreement (each, a "**New Research Program Inclusion Date**") that relate specifically to such New Research Program (including the Target thereof) or such New CTL Products (the "**New Research Patent Rights**") shall be considered Research Agreement Patent Rights as of the New Research Program Inclusion Date, and shall be subject to this Section 13.2. Promptly following any New Research Program Inclusion Date, unless the Parties otherwise agree in writing, Institute will transfer to Licensee, or to counsel of Licensee's choice reasonably acceptable to Institute, all relevant documentation required for Licensee to assume responsibility for prosecution and maintenance of such New Research Patent Rights. Following the New Research Program Inclusion Date, Licensee will provide Institute promptly with copies of all relevant documentation so that Institute will be informed of the continuing prosecution and may comment upon such documentation sufficiently in advance of any initial deadline for filing a response. Licensee agrees that it will incorporate any reasonable comments by Institute in relation to such prosecution activities, provided that with respect to any claims of the Research Agreement Patent Rights that relate directly to Autologous CTLs or Autologous CTL Products, or the manufacture or use thereof, Institute shall have the right to make the final decision regarding prosecution of such claims, including the filing of any new claims relating to Autologous CTLs or Autologous CTL Products, or the manufacture or use thereof.

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

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

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

14. PATENT INFRINGEMENT

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

14.2 **Enforcement**. If infringing activity of potential commercial significance has not been abated within [***] following the date the Infringement Notice for such activity was provided, then during the period in which, and in the jurisdiction where, Licensee has exclusive rights under this Agreement, Licensee shall have the first right, but not the obligation, to Institute suit for patent infringement against the infringer after providing Institute (a) [***], including an [***] and (b) [***] . Institute may voluntarily join such suit at Licensee's reasonable expense, but may not thereafter commence suit against the infringer for the acts of infringement that are the subject of Licensee's suit or any judgment rendered in such suit. Licensee may not join Institute in a suit initiated by Licensee without Institute's prior written consent, such consent not to be unreasonably withheld, delayed or conditioned. If in a suit initiated by Licensee, Institute is involuntarily joined other than by Licensee, then Licensee will pay any documented costs incurred by Institute arising out of such suit, including any documented legal fees of counsel that Institute selects and retains to represent it in the suit. Licensee shall be free to enter into a settlement, consent judgment or other voluntary disposition, provided that any settlement, consent judgment or other voluntary disposition that (i) limits the scope, validity or enforcement of the Patent Rights or (ii) admits fault or wrongdoing on the part of Licensee or Institute must be approved in advance by Institute in writing, such approval not to be unreasonably withheld, delayed or conditioned. Licensee's request for such approval shall include complete copies of final settlement documents, a detailed summary of such settlement, and any other information material to such settlement. Institute shall provide Licensee notice of its approval or denial within [***] of any request for such approval by Licensee, provided that (A) in the event Institute wishes to deny such approval, such notice shall include a detailed written description of Institute's reasonable objections to the proposed settlement, consent judgment, or other voluntary disposition and (B) Institute shall be deemed to have approved of such proposed settlement, consent judgment, or other voluntary disposition in the event it fails to provide such notice within such [***] period in accordance herewith.

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

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

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

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

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

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

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

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

14.5 **Cooperation**. Each Party will reasonably cooperate and assist with the other in litigation proceedings Instituted hereunder but at the expense of the Party who initiated the suit (unless such suit is being jointly prosecuted by the Parties). For clarity, such requirement does not require a Party to join a suit unless otherwise specifically required under this Agreement.

If Institute is subjected to Third Party discovery related to the Patent Rights licensed to Licensee hereunder, or to Licensed Products, Licensee will pay Institute's documented out of pocket expenses with respect to same.

15. INDEMNIFICATION

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

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

15.3 **Process** . As a condition to an Institute Indemnitee's or Licensee Indemnitee's (each, an "**Indemnitee**") right to receive indemnification under Section 15.1 or Section 15.2, as applicable, an Indemnitee shall: (a) promptly notify (not to exceed thirty (30) days) the indemnifying Party as soon as it becomes aware of a claim or suit for which indemnification may be sought pursuant hereto; (b) reasonably cooperate, and cause the individual Indemnitees claiming indemnification under this Article 15 to reasonably cooperate, with the indemnifying Party in the defense, settlement or compromise of such claim or suit; and (c) permit

the indemnifying Party to control the defense, settlement or compromise of such claim or suit, including the right to select defense counsel. In no event, however, may the indemnifying Party compromise or settle any claim or suit in a manner which (i) admits fault or negligence on the part of any Indemnitee; (ii) commits any Indemnitee to take, or forbear to take, any action, without the prior written consent of the other Party (which consent in the case of either (i) or (ii) shall not be unreasonably withheld, delayed or conditioned), or (iii) where the indemnifying Party is Licensee, grant any rights under the Patent Rights except for Sublicenses permitted under Article 2 . The Indemnitees shall reasonably cooperate with the indemnifying Party and its counsel in the course of the investigation of, preparation for and defense of any such suit, claim or demand, such cooperation to include without limitation using reasonable efforts to provide or make available documents, information and witnesses, and provided further that no Indemnitee may compromise or settle any such Third Party claim without the indemnifying Party's written consent.

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

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

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

16. **NOTICES**

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

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

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

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

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

In the case of Licensee:

For notices:

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

With a Copy to:

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

In the case of Institute:

For notices:

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

For remittance of payments:

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

17. **ASSIGNABILITY**

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

18. **FORCE MAJEURE**

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

19. **GOVERNING LAWS**

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

20. **DISPUTE RESOLUTION**

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

20.2 **Arbitration**. Any Dispute referred for arbitration shall be finally settled under the Rules of the International Centre for Dispute Resolution (the "**Rules of Arbitration**") then in force, by one arbitrator appointed in accordance with such Rules of Arbitration. The

Arbitral Tribunal shall be guided by the IBA Rules on the Taking of Evidence in International Arbitration, and there shall be no depositions. The place of the arbitration shall be New York, New York, United States of America. The language of the arbitration shall be English.

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

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

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

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

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

21. COMPLIANCE WITH LAWS

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

22. CONFIDENTIALITY

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

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

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

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

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

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

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

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

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

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

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

23. **MISCELLANEOUS**

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

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

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

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

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

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

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

23.8 **Construction**. Except where the context otherwise requires, wherever used, the use of any gender will be applicable to all genders, and the word "or" is used in the inclusive sense. When used in this Agreement, "including" means "including without limitation". References to either Party include the successors and permitted assigns of that Party. The Recitals are incorporated by reference into this Agreement. The headings of this Agreement are for convenience of reference only and in no way define, describe, extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement. The Parties have

each consulted counsel of their choice regarding this Agreement, and, accordingly, no provisions of this Agreement will be construed against either Party on the basis that the Party drafted this Agreement or any provision thereof. The official text of this Agreement, any notice given or accounts or statements required by this Agreement, and any dispute proceeding related to or arising hereunder, will be in English. If any dispute concerning the construction or meaning of this Agreement arises, then reference will be made only to this Agreement as written in English and not to any translation into any other language.

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

- Signature Page Follows -

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

A**TARA BIOTHERAPEUTICS, INC.**	**THE COUNCIL OF THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH**
By: /s/ Jakob DuPont (Signature)	By: /s/ Lee Bruce (Signature)
Name: Jakob DuPont (Please Print)	Name: Lee Bruce (Please Print)
Title: Head of R&D	Title: Chief Operating Officer
Date: 12/20/2021	Date: 12/22/2021

Schedule 1.24

Competing Products

[***]

Schedule 1.79

Patent Rights

[***]

Schedule 2.1(a)

Assigned Patents

[***]

Schedule 2.5

[***]

Schedule 4.15

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

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

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

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

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

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

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

Schedule 13.2

[***]

Exhibit 10.39

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

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

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.

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; provided, however, in the event the Change in Control is not a "change in control event" under Section 409A of the Internal Revenue Code of 1986, as amended (the "Code") [or the Separation from Service

occurs more than two years following the Change in Control] and the severance payable under this Section 8.2.1 is considered nonqualified deferred compensation within the meaning of Section 409A of the Code, then the severance payable under this Section 8.2.1 shall be paid in installments in accordance with Section 8.1.1. to the extent required to comply with Section 409A of the Code. 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 and, if applicable, distributable within sixty (60) days following Employee's Separation from Service (or such other date as required to comply with Section 409A of the Code; provided, that the performance conditions applicable to any outstanding and unvested equity awards subject to performance conditions will be deemed satisfied at the target level specified in the terms of the applicable equity award document; provided, further, that any awards that are unvested as of the date of Separation from Service but would vest upon the satisfaction of the Release Requirement, shall remain outstanding and shall not be exercisable or distributable until the satisfaction of the Release Requirement in accordance with Section 9 of this Agreement.

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 hereundershall 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) the Employee's refusal (after written notice and reasonable opportunity to cure) to perform duties properly assigned which are consistent with the scope and nature of the Employee's position; (ii) the Employee's commission of an act materially and demonstrably detrimental to the financial condition and/or goodwill of the Company or any of its subsidiaries, which act constitutes gross negligence or willful misconduct in the performance of duties to the Company or any of its subsidiaries; (iii) the Employee's commission of any theft, fraud, act of dishonesty or breach of trust resulting in or intended to result in material personal gain or enrichment of the Employee at the direct or indirect expense of the Company or any of its subsidiaries; (iv) the Employee's conviction of, or plea of guilty or nolo contendere to a felony; (v) a material violation of any restrictive covenant with respect to non-competition, non-solicitation, confidentiality or protection of trade secrets (or similar provision regarding intellectual property) by which the Employee is bound under any agreement between the Employee and the Company and its subsidiaries; or (vi) a material and willful violation of the Company's written policies or of the Employee's statutory or common law duty of loyalty to the Company or its affiliates that in either case is materially injurious to the Company, monetarily or otherwise. No act or failure to act will be considered "willful" (x) unless it is done, or omitted to be done, by the Covered Employee in bad faith or without reasonable belief that the Employee's action or omission was in the best interests of the Company or (y) if it is done, or omitted to be done, in reliance on the informed advice of the Company's outside counsel or independent accountants or at the e xpress direction of the Board. An event described in clauses (i), (ii), (iii), (v) or (vi) of this definition herein shall not be treated as "Cause " until after the Employee has been given written notice of such event, failure , conduct or breach and the 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, "Good Reason" shall mean, without the Employee's prior written consent, any one or more of the following: (i) the Company reduces the amount of the Employee's base salary or cash bonus opportunity (it being understood that the Company shall have discretion to set the Company's and the Employee's personal performance targets to which the cash bonus will be tied); (ii) the Company adversely changes the Employee's reporting responsibilities, titles or office as in effect as of the date hereof or reduces the Employee's position, authority, duties, responsibilities or, after a Change in Control, the Employee's status, in a manner that is materially inconsistent with the positions, authority, duties, responsibilities or, after a Change in Control, status, which the Employee then holds; (iii) any successor to the Company, as described in Section 14.7, does not expressly assume any material obligation of the Company or any of its subsidiaries to the Employee under this

Agreement or any other agreement or plan pursuant to which the Employee receives benefits or rights; or (iv) the Company changes the Employee's place of work to a location more than fifty (50) miles from the Employee's present place of work, provided, however, that the occurrence of any such condition shall not constitute Good Reason unless (A) the Employee provides written notice to the Company of the existence of such condition not later than 60 days after the Employee knows or reasonably should know of the existence of such condition, (B) the Company shall have failed to remedy such condition within 30 days after receipt of such notice and (C) the Employee resigns due to the existence of such condition within 60 days after the expiration of the remedial period described in clause (B) hereof.

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.

14.10 Clawbacks. The payments to Employee pursuant to this Agreement are subject to forfeiture or recovery by the Company or other action pursuant to any clawback or recoupment policy which the Company may adopt from time to time, including without limitation any such policy or provision that the Company has included in any of its existing compensation programs or plans or that it may be required to adopt under the Dodd-Frank Wall Street Reform and Consumer Protection Act and implementing rules and regulations thereunder, or as otherwise required by law.

14.11 Company Policies. Employee shall be subject to additional Company policies as they may exist from time-to-time, including policies with regard to stock ownership by senior executives and policies regarding trading of securities.

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 21.1

LIST OF SUBSIDIARIES

The following is a list of subsidiaries of the Company as of December 31, 2021:

Subsidiary Legal Name	State or other Jurisdiction of Incorporation or Organization
Atara Biotherapeutics Australia Pty. Ltd.	Australia
Atara Biotherapeutics Ireland Limited	Ireland
Atara Biotherapeutics Netherlands B.V.	Netherlands
Atara Biotherapeutics Switzerland GmbH	Switzerland

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in registration statements No. 333-199508, No. 333-204076, No. 333-209961, No. 333-214431, No. 333-219763, No. 333-223254, No. 333-229861, No. 333-236704, No. 333-249976, No. 333-253734 and No. 333-259882 on Form S-8 of our reports dated February 28, 2022, relating to the consolidated financial statements of Atara Biotherapeutics, Inc. and subsidiaries (the "Company") and the effectiveness of the Company's internal control over financial reporting, appearing in this Annual Report on Form 10-K of Atara Biotherapeutics, Inc. for the year ended December 31, 2021.

/s/ *DELOITTE & TOUCHE LLP*

San Francisco, California
February 28, 2022

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 Annual Report on Form 10-K 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: February 28, 2022

/s/ Pascal Touchon
Pascal Touchon
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER

PURSUANT TO

SECURITIES EXCHANGE ACT RULES 13A-14(A) AND 15D-14(A)

I, Utpal Koppikar, certify that:

1. I have reviewed this Annual Report on Form 10-K 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: February 28, 2022

/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

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in connection with the Annual Report of Atara Biotherapeutics, Inc. (the "Company") on Form 10-K for the year ended December 31, 2021, 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 Exchange Act; 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: February 28, 2022

/s/ Pascal Touchon
Pascal Touchon
President and 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.

This certification accompanies the Annual Report on Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.