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# 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, 2020**

☐ **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 001-36076**

# FATE THERAPEUTICS, INC.

**(Exact name of registrant as specified in its charter)**

| **Delaware** | **65-1311552** |
|---|---|
| **(State or other jurisdiction of incorporation or organization)** | **(I.R.S. Employer Identification No.)** |
| **3535 General Atomics Court, Suite 200, San Diego, CA** | **92121** |
| **(Address of principal executive offices)** | **(Zip Code)** |

**(858) 875-1800**

**(Registrant's telephone number, including area code)**

**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, $0.001 par value** | **FATE** | **NASDAQ Global Market** |

**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 ☒ or No ☐

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

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

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

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

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

Indicate by check mark whether the registrant 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 Act). Yes ☐ No ☒

The aggregate market value of the common stock held by non-affiliates of the registrant was approximately $2,490,000,000 as of June 30, 2020 based upon the closing sale price on The Nasdaq Global Market reported for such date. Shares of common stock held by each executive officer and director and certain holders of more than 10% of the outstanding shares of the registrant's common stock have been excluded in that such persons may be deemed to be affiliates. Shares of common stock held by other persons, including certain other holders of more than 10% of the outstanding shares of common stock, have not been excluded in that such persons are not deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of outstanding shares of the registrant's common stock, par value $0.001 per share, as of February 22, 2021 was 93,783,374.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission, or SEC, on or before the date 120 days after the conclusion of the registrant's fiscal year ended December 31, 2020 pursuant to Regulation 14A in connection with the registrant's 2021 Annual Meeting of Stockholders are incorporated by reference into Part III of this annual report on Form 10-K.

**FATE THERAPEUTICS, INC.**
**Annual Report on Form 10-K**
**For the Fiscal Year Ended December 31, 2020**

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## RISK FACTOR SUMMARY

*Below is a summary of the principal factors that make an investment in our common stock speculative or risky. This summary does not address all of the risks that we face. Additional discussion of the risks summarized in this risk factor summary, and other risks that we face, can be found below under the heading "Risk Factors" and should be carefully considered, together with other information in this Annual Report on Form 10-K and our other filings with the SEC before making investment decisions regarding our common stock.*

- The global novel coronavirus, SARS-CoV-2 (COVID-19), pandemic could adversely impact various aspects of our business, results of operations and financial condition.
- We may face delays in initiating, conducting or completing our clinical trials, including due to difficulties enrolling patients in our clinical trials, and we may not be able to initiate, conduct or complete them at all.
- If we fail to complete the preclinical or clinical development of, or to obtain regulatory approval for, our product candidates, our business would be significantly harmed.
- The manufacture and distribution of our cell product candidates is complex and subject to a multitude of risks. These risks could substantially limit the clinical and commercial supply of our product candidates and increase our costs, and the development and commercialization of our product candidates could be significantly delayed or restricted if the United States Food and Drug Administration (FDA) or other regulatory authorities impose additional requirements on our manufacturing operations or if we are required to change our manufacturing operations to comply with regulatory requirements.
- Our inability to manufacture sufficient quantities of our product candidates, or the loss of our third-party contract manufacturers, or our or their failure to supply sufficient quantities of our product candidates at acceptable quality levels or prices, or at all, would materially and adversely affect our business.
- We have limited experience manufacturing our product candidates on a clinical scale, and no experience manufacturing on a commercial scale. Any failure by the third parties on whom we depend to manufacture our product candidates, including third-party cell processing facilities, consistently and under the proper conditions may result in delays to our clinical development plans and impair our ability to obtain approval for, or commercialize, our product candidates.
- We depend on third party suppliers, including sole source suppliers, for the provision of reagents, materials, devices and equipment that are used by us and our third party contract manufacturers in the production of our product candidates, the loss of which could adversely impact our ability to conduct our clinical trials or commercialize our product candidates, if approved.
- We depend on strategic partnerships and collaboration arrangements for the development and commercialization of certain of our product candidates in certain indications or geographic territories, and if these arrangements are unsuccessful, this could result in delays and other obstacles in the development, manufacture or commercialization of any of our product candidates and materially harm our results of operations.
- Development of our product candidates will require substantial additional funding, without which we will be unable to complete preclinical or clinical development of, or obtain regulatory approval for, our product candidates.
- We have a limited operating history, have incurred significant losses since our inception, and anticipate that we will continue to incur significant losses for the foreseeable future.
- If we are unable to protect our intellectual property, or obtain and maintain patent protection for our technology and product candidates, other companies could develop products based on our discoveries, which may reduce demand for our products and harm our business.
- If we fail to comply with our obligations under our license agreements, we could lose rights to our product candidates or key technologies.
- We may not be successful in obtaining or maintaining necessary rights to product components and processes for development or manufacture of our product candidates which may cause us to operate our business in a more costly or otherwise adverse manner that was not anticipated.
- We do not have experience marketing any product candidates and do not have a sales force or distribution capabilities, and if our products are approved we may be unable to commercialize them successfully.

- The commercial success of our product candidates will depend upon the degree of market acceptance by physicians, patients, third-party payers and others in the medical community.
- We face competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.
- The success of our existing product candidates is substantially dependent on developments within the field of cellular immunotherapy, some of which are beyond our control.
- Our principal stockholders and management own a significant percentage of our stock and may be able to exercise significant control over our company.

**The summary risk factors described above should be read together with the text of the full risk factors below, in the section entitled "Risk Factors" and the other information set forth in this annual report on Form 10-K, including our consolidated financial statements and the related notes, as well as in other documents that we file with the SEC. The risks summarized above or described in full below are not the only risks that we face. Additional risks and uncertainties not precisely known to us, or that we currently deem to be immaterial may also materially adversely affect our business, financial condition, results of operations and future growth prospects.**

## FORWARD–LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, even if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. All statements other than statements of historical facts contained in this Annual Report on Form 10-K are forward-looking statements. In some cases, you can identify forward-looking statements by words such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “seek,” “should,” “target,” “will,” “would,” or the negative of these words or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- our plans to research, develop and commercialize our product candidates;
- the initiation, progress, success, cost and timing of our clinical trials and product development activities;
- our ability and timing to advance our product candidates in, and to successfully initiate, conduct, enroll and complete, clinical trials;
- the timing and likelihood of, and our ability to obtain and maintain, regulatory clearance of our Investigational New Drug (IND) applications for and regulatory approval of our product candidates;
- our ability to manufacture our product candidates for clinical development and, if approved, for commercialization, and the timing and costs of such manufacture;
- our ability to source clinical and, if approved, commercial materials and supplies used to manufacture our product candidates;
- the therapeutic potential of our product candidates, and the disease indications for which we intend to develop our product candidates;
- the performance of third parties in connection with the development and manufacture of our product candidates, including third parties conducting our clinical trials as well as third-party suppliers and manufacturers;
- the potential of our technology platform, including our induced pluripotent stem cell (iPSC) product platform, and our ability to leverage our platform in our research, development and commercialization activities for our product candidates;
- our ability to attract and retain strategic collaborators with development, regulatory and commercialization expertise;
- the potential benefits of strategic collaboration agreements and our ability, and the ability of our collaborators, to successfully develop product candidates under the respective collaborations;
- our ability to obtain funding for our operations, including funding necessary to initiate and complete clinical trials of our product candidates;
- our ability to develop sales and marketing capabilities, whether alone or with actual or potential collaborators, to commercialize our product candidates, if approved;
- our ability to successfully commercialize our product candidates, if approved;
- the size and growth of the potential markets for our product candidates and our ability to serve those markets;
- regulatory developments and approval pathways in the United States and foreign countries for our product candidates;
- the potential scope and value of our intellectual property rights;
- our ability, and the ability of our licensors, to obtain, maintain, defend and enforce intellectual property rights protecting our product candidates, and our ability to develop and commercialize our product candidates without infringing the proprietary rights of third parties;
- our ability to recruit and retain key personnel;
- the accuracy of our projections and estimates regarding our revenues, expenses, capital requirements, cash utilization and need for additional financing;

- developments relating to our competitors and our industry; and
- other risks and uncertainties, including those described under Part I, Item 1A. Risk Factors of this Annual Report on Form 10-K.

Any forward-looking statements in this Annual Report on Form 10-K reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under Part I, Item 1A. Risk Factors and elsewhere in this Annual Report on Form 10-K. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Annual Report on Form 10-K also contains estimates, projections and other information concerning our industry, our business, and the markets for certain diseases, including data regarding the estimated size of those markets, and the incidence and prevalence of certain medical conditions. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources.

*In this Annual Report on Form 10-K, unless the context requires otherwise, "Fate Therapeutics," "Company," "we," "our," and "us" means Fate Therapeutics, Inc. and its subsidiaries.*

# PART I

## ITEM 1. Business

### Overview

We are a clinical-stage biopharmaceutical company dedicated to the development of programmed cellular immunotherapies for patients with cancer. We are developing first-in-class cell therapy product candidates based on a simple notion: we believe that better cell therapies start with better cells.

To create better cell therapies, we use a therapeutic approach that we generally refer to as cell programming. For certain of our product candidates, we use pharmacologic modulators, such as small molecules, to enhance the biological properties and therapeutic function of allogeneic, or healthy donor-sourced, cells *ex vivo* before our product candidates are administered to a patient. In other cases, we use human induced pluripotent stem cells (iPSCs) to generate a clonal master iPSC line having preferred biological properties, and we direct the fate of the clonal master iPSC line to create our cell therapy product candidate. Analogous to master cell lines used to manufacture biopharmaceutical drug products such as monoclonal antibodies, we believe clonal master iPSC lines can be used as a renewable source for manufacturing cell therapy products which are well-defined and uniform in composition, can be repeatedly mass produced at significant scale in a cost-effective manner, and can be delivered off-the-shelf to treat many patients.

Utilizing these therapeutic approaches, we program cells of the blood and immune system and are advancing a pipeline of programmed cellular immunotherapies, including off-the-shelf natural killer (NK) and T-cell product candidates derived from clonal master iPSC lines for the treatment of cancer. The following table summarizes our programmed cellular immunotherapies currently under development:

| Product | Cell Type | Engineered Functionality | Indication | R&D | Preclinical | Clinical |
|---|---|---|---|---|---|---|
| *iPSC-derived Cell Products – Hematologic Malignancies* | | | | | | |
| **FT516** | iNK | hnCD16 | AML | | | |
| **FT516** | iNK | hnCD16 | BCL + mAb | | | |
| **FT596** | iNK | hnCD16 + IL15-RF + CAR19 | BCL and CLL ± mAb | | | |
| **FT596** | iNK | hnCD16 + IL15-RF + CAR19 | Post-HSCT + mAb (IIT) | | | |
| **FT538** | iNK | hnCD16 + IL15-RF + CD38-KO | AML | | | |
| **FT538** | iNK | hnCD16 + IL15-RF + CD38-KO | AML + mAb (IIT) | | | |
| **FT538** | iNK | hnCD16 + IL15-RF + CD38-KO | MM + mAb | | | |
| **FT576** | iNK | hnCD16 + IL15-RF + CD38-KO + CAR-BCMA | MM ± mAb | | | |
| **FT819** | iT | TRAC-targeted CAR19 + TCR-KO | B-cell malignancies | | | |
| *iPSC-derived Cell Products – Advanced Solid Tumors* | | | | | | |
| **FT500** | iNK | Non-engineered | Advanced Solid Tumors + CPB | | | |
| **FT516** | iNK | hnCD16 | Advanced Solid Tumors + mAb | | | |
| **FT516** | iNK | hnCD16 | Recurrent Ovarian Cancer ± mAb (IIT) | | | |
| **FT536** | iNK | Multiplexed engineered CAR-MICA/B | Advanced Solid Tumors | | | |
| *iPSC-derived Cell Products – Cancer Immunotherapy Collaborations* | | | | | | |
| **Janssen** | iNK and iT | Multiplexed engineered CAR-targeted | Not disclosed (hematologic / solid tumors) | | | |
| **ONO** | iT | Multiplexed engineered CAR-targeted | Not disclosed (solid tumors) | | | |
| *Donor-derived Cell Products* | | | | | | |
| **ProTmune** | Hematopoietic graft | Small molecule modulated (non-engineered) | Hematologic Malignancies | | | |

**iPSC** = induced pluripotent stem cell **iNK** = iPSC-derived NK cell **iT** = iPSC-derived T cell **iMDSC** = iPSC-derived myeloid-derived suppressor cell

**hnCD16** = high-affinity, non-cleavable CD16 Fc receptor **IL15-RF** = IL-15/IL-15 receptor fusion **CD38-KO** = CD38 knock-out **CAR** = chimeric antigen receptor

**mAb** = monoclonal antibody **CPB** = checkpoint blockade therapy **HSCT** = hematopoietic stem cell transplant

**AML** = Acute myelogenous leukemia **BCL** = B-cell lymphoma **CLL** = Chronic lymphocytic leukemia **MM** = Multiple myeloma

**IIT** = Investigator-initiated study

**Our Approach**

The use of human cells as therapeutic entities has disease-transforming potential, and compelling evidence of medical benefit for cell therapy exists across a broad spectrum of severe, life-threatening diseases. One of the most successful and widespread applications of cell therapy is hematopoietic stem cell transplantation (HSCT), with over 60,000 procedures performed worldwide on an annual basis. HSCT holds curative potential for patients afflicted with hematologic malignancies, such as leukemia and lymphoma, and with rare genetic disorders, such as hemoglobinopathies, inherited metabolic disorders and immune deficiencies.

Building upon the success of HSCT, the clinical investigation of cell-based cancer immunotherapy is rapidly expanding. One particular form of cell-based cancer immunotherapy, chimeric antigen receptor (CAR) T-cell therapy, has recently emerged as a revolutionary and potentially curative therapy for patients with certain hematologic malignancies, including refractory cancers. In fact, in 2017, two CAR T-cell therapies were approved by the United States Food and Drug Administration (FDA) for the treatment of relapsed / refractory B-cell precursor acute lymphoblastic leukemia (ALL) and relapsed / refractory diffuse large B-cell lymphoma (DLBCL).

Cell-based cancer immunotherapies undergoing clinical investigation today most often rely on the use of autologous, or a patient's own, cells. The requirement to source, engineer, expand and deliver cells patient-by-patient is logistically complex, resource intensive and expensive, and can result in significant batch-to-batch variability in product identity, purity and potency as well as in manufacturing failures. Significant hurdles remain to ensure that cell-based cancer immunotherapies can be consistently manufactured and reliably delivered, in a cost-effective manner and at the scale necessary, to support broad patient access and wide-spread commercialization.

Rather than rely on the use of a patient's own cells, we seek to use allogeneic, or healthy donor-sourced, cells and clonal master iPSC lines to manufacture, develop and commercialize first-in-class cellular immunotherapies. We believe our approach has the potential to improve cell product consistency and potency, reduce manufacturing costs, shorten time to treatment and reach more patients.

**Our Strategy**

The key pillars of our strategy are to:

- **Exploit our leadership position in iPSC technology to develop and commercialize universal, off-the-shelf cell products for the treatment of cancer.** Human iPSCs, with their unique dual capacity to be indefinitely expanded and differentiated in culture into any type of cell in the body, hold revolutionary potential for creating better cell therapies. The groundbreaking discovery that fully differentiated human cells can be induced to a pluripotent state through the expression of certain genes was recognized with the 2012 Nobel Prize in Science and Medicine. We believe iPSCs can be used to overcome key limitations inherent in many of the cell therapy product candidates undergoing development today, including the requirement to source, isolate, engineer and expand cells from an individual patient or healthy donor with each batch of production. These batch-to-batch manufacturing requirements are logistically complex and expensive, and can result in variable cell product identity, purity and potency as well as manufacturing failures.

  We are applying our expertise in iPSC biology to genetically engineer, isolate and select single-cell iPSCs for clonal expansion, characterization and cryopreservation as clonal master iPSC lines. Analogous to master cell lines used to manufacture biopharmaceutical drug products such as monoclonal antibodies, we believe clonal master iPSC lines can be made and used as a renewable source for manufacturing cell therapy products that are well-defined and uniform in composition, can be repeatedly mass produced at significant scale in a cost-effective manner, and can be delivered off-the-shelf to treat many patients.

  We have amassed significant expertise in the manufacture of natural killer (NK) cells and T cells from clonal master iPSC lines. Our expertise includes: generating, engineering, isolating and characterizing single-cell iPSC clones; creating and cryopreserving clonal master iPSC lines; differentiating these clonal master cell lines to produce NK cells and T cells; and regulatory affairs experience to enable clinical investigation of iPSC-derived cell products. We believe our iPSC-derived NK cell and T-cell product candidates have the potential to be administered in multi-dose, multi-cycle treatment regimens, including in combination with other cancer treatments, to drive deeper and more durable responses.

- **Forge collaborations with leading researchers and top medical centers to accelerate development of and rapidly translate our iPSC-derived cell product candidates into first-in-human clinical trials.** The research and development of iPSC-derived cell product candidates requires an exceptional team of people and scientific, manufacturing and clinical expertise across a range of disciplines. We have and will continue to seek collaborations with leading researchers, investigators and top medical centers for the research, development, manufacture and clinical translation of our iPSC-derived cell product candidates. Among our collaborations is a partnership with the University of Minnesota, led by Dr. Jeffrey S. Miller, a renowned NK cell biologist and clinical investigator, to support the development of our iPSC-derived NK cell product candidates, including FT500 and FT516. FT500 is the first-ever iPSC-derived cell therapy to be administered to patients in the United States (U.S.), and FT516 is the first-ever engineered iPSC-derived cell therapy administered to patients in the world. We also have a partnership with Memorial Sloan Kettering Cancer Center, led by Dr. Michel Sadelain, a renowned T-cell biologist and a recognized founder of CAR T-cell therapy, to support the development of our iPSC-derived CAR T-cell product candidates, including FT819. We believe this approach to research and development will maximize our potential to successfully build our iPSC product platform, accelerate the clinical translation and clinical investigation of our iPSC-derived cell product candidates, and efficiently establish clinical proof-of-concept for our iPSC-derived cell product candidates.
- **Selectively share our iPSC product platform with industry-leading strategic partners for the development of iPSC-derived cell therapies.** The research, development and clinical investigation of cell therapies for the treatment of human diseases is rapidly expanding. We believe we are uniquely positioned as an expert partner of choice for industry-leading developers seeking to develop iPSC-derived cell therapies for the treatment of human diseases, including cancer. For example, we are collaborating with Ono Pharmaceutical Co. Ltd. (Ono) to develop and commercialize off-the-shelf, iPSC-derived CAR T-cells for the treatment of certain solid tumors, and we are collaborating with Janssen Biotech, Inc. (Janssen), part of the Janssen Pharmaceutical Companies of Johnson & Johnson, to develop and commercialize off-the-shelf, iPSC-derived CAR NK cell and CAR T-cell product candidates for the treatment of certain hematologic malignancies and solid tumors. Since iPSCs have the unique capacity to be genetically engineered, indefinitely expanded and differentiated in culture into any type of cell in the body, we believe there is significant opportunity to broadly exploit our industry-leading iPSC product platform and intellectual property position in other disease areas beyond cancer. We will continue to seek partnerships with institutions and companies for the research, development and commercialization of iPSC-derived cell therapies for the treatment of human diseases.
- **Efficiently develop and commercialize first-in-class cellular immunotherapies for severe, life-threatening diseases where treatment options are limited.** We are clinically developing first-in-class cellular immunotherapies to improve the lives of patients with severe, life-threatening diseases, where the unmet need is significant and where regulatory agencies offer efficient and expedited development and review programs. For example, we are developing our product candidate ProTmune as a first-in-class hematopoietic cell graft for the prevention of life-threatening complications, including graft-versus-host disease (GvHD), in patients undergoing allogeneic HSCT. GvHD is a leading cause of morbidity and mortality in patients undergoing allogeneic HSCT, and there are currently no therapies approved by the FDA for the prevention of GvHD. The FDA has granted Fast Track designation, and the FDA and the European Commission have granted Orphan Drug Designation and Orphan Medicinal Product Designation, respectively, for ProTmune. Due to high incidences of morbidity and mortality and the rare disease nature of many of our target indications, we believe clinical trials that we conduct will generally require relatively small numbers of subjects and that our development path to approval may be efficient.

**Our Off-the-shelf, iPSC-derived Cellular Immunotherapy Pipeline**

NK cells have an innate ability to rapidly seek and destroy abnormal cells, such as cancer or virally-infected cells, and represent one of the body's first lines of immunological defense. NK cells have the unique ability to selectively identify and destroy abnormal cells through multiple mechanisms while leaving normal healthy cells unharmed. These cytotoxic mechanisms include: direct innate killing by binding to stress ligands expressed by abnormal cells and releasing toxic granules; indirect killing by producing and releasing proinflammatory and chemotactic cytokines that play a pivotal role in orchestrating the adaptive immune response; and antibody-mediated targeted killing by binding to and enhancing the cancer-killing effect of endogenous and therapeutic antibodies through a process known as antibody-dependent cellular cytotoxicity (ADCC).

T cells, or T-lymphocytes, play a critical role in adaptive immunity and are distinguished from other cells of the immune system by the presence of a T-cell receptor (TCR) on their surface. TCRs are generated by DNA rearrangement and positively selected for their capacity to engage host major histocompatibility complex (MHC) molecules. The majority of T cells, termed alpha beta T cells (αβ T cells), rearrange their alpha and beta chains on the TCR, which confers specificity and enables T cells to recognize non-self molecules, known as non-self antigens, expressed on the surface of transformed or foreign cells. Antigens inside a cell are bound to, and are routinely brought to the surface of a cell, by MHC class I molecules. Upon antigen recognition, T cells bind to the MHC-antigen complex, become activated and destroy the targeted cell. Unlike NK cells, T cells are limited by antigen-specific binding of their TCR in order to induce cellular cytotoxicity.

We are developing off-the-shelf, iPSC-derived NK cell and T-cell cancer immunotherapies, including cell product candidates intended to synergize with checkpoint inhibitor and monoclonal antibody therapies and to target tumor-associated antigens.

***FT500: iPSC-derived NK Cell Product Candidate for Advanced Solid Tumors***

Therapies that block inhibitory immunological signaling pathways have transformed the oncology landscape. For example, the use of monoclonal antibodies known as checkpoint inhibitors, which bind immune checkpoint proteins and block pathways that suppress T cells, has resulted in long term remissions in multiple tumor indications. Unfortunately, more than 60% of patients treated with checkpoint inhibitors will not respond or will relapse. As a result, there is significant unmet need for novel therapeutic approaches to overcome resistance to checkpoint inhibitors.

One common mechanism of resistance to checkpoint inhibitor therapy arises through point mutations, deletions or loss of heterozygosity in beta-2-microglobulin (B2M), an essential component of MHC class I antigen presentation. A recent longitudinal analysis in a cohort of patients treated with checkpoint inhibitor therapy identified B2M expression defects in approximately 30% of patients with progressing disease. In fact, loss of heterozygosity in B2M was found to be enriched three-fold in non-responders (~30%) vs. responders (~10%) and was associated with poor overall survival. Additionally, complete loss of B2M expression was found only in non-responders. These findings suggest that defects in B2M expression can contribute to tumor evasion and disease progression.

One potential strategy to overcome resistance to checkpoint inhibitor therapy, especially in patients whose tumors harbor defects in B2M expression, is through the administration of allogeneic NK cells. NK cells have the inherent capability to recognize and directly kill cells that lack MHC class I antigen presentation. In addition to direct cytotoxicity, NK cells can also secrete proinflammatory and chemotactic cytokines, which can induce tumor-resident T cells to re-engage as well as recruit T cells to the tumor site. As such, allogeneic NK cell therapy may represent a novel therapeutic strategy to overcome resistance to checkpoint inhibitor therapy in certain patients by directly killing tumor cells and by potentiating an adaptive immune response.

FT500 is an investigational off-the-shelf NK cell cancer immunotherapy derived from a clonal master iPSC line. To our knowledge, FT500 is the first-ever iPSC-derived cell therapy cleared for clinical investigation in the United States. We are developing FT500 for the treatment of advanced solid tumors.

FT500 is being studied in an ongoing, multi-center Phase 1 clinical trial. The trial is designed to assess the safety and determine the maximum dose of FT500 in adult patients with advanced solid tumors. The trial includes two treatment regimens: FT500 as a monotherapy in patients that are candidates for salvage therapy (Regimen A); and, in patients who have previously failed or progressed on checkpoint inhibitor therapy, FT500 in combination with the checkpoint inhibitor on which the patient failed or progressed (Regimen B). FT500 is administered in three once-weekly doses following outpatient lympho-conditioning. For those patients that are clinically stable at Day 29, an additional treatment course of three once-weekly doses may be administered.

At the Society for Immunotherapy of Cancer (SITC) annual meeting in November 2020, we reported clinical data from the dose-escalation stage of the Phase 1 clinical trial as of an October 13, 2020 cutoff date. Fifteen heavily pre-treated patients, ten of whom were refractory to their last prior therapy, were administered up to six doses of FT500. In Regimen A, three patients were treated in the first dose cohort of 100 million cells per dose and six patients were treated in the second dose cohort of 300 million cells per dose; in Regimen B, three patients were treated in the first dose cohort of 100 million cells per dose, and three patients were treated in the second dose cohort of 300 million cells per dose, in combination with checkpoint inhibitor therapy. No dose-limiting toxicities (DLTs), no FT500-related serious adverse events (SAEs) or Grade ≥ 3 adverse events (AEs), and no events of any grade of cytokine release syndrome (CRS), immune effector cell-associated neurotoxicity syndrome (ICANS), or GvHD were reported by investigators. Eleven patients had a best overall response of stable disease.

In addition to our clinical assessment, we also evaluated patients' immune response to FT500 to assess the potential for both T-cell and B-cell mediated immunogenicity. The T-cell compartment of fourteen patients was evaluated for T-cell mediated host-versus-product (FT500) allo-reactivity. A TCR repertoire analysis conducted at multiple time points following treatment with FT500 was not indicative of a robust allo-reactive T-cell response against FT500. In addition, the antibody repertoire of 15 patients was analyzed for targeting of the six HLA class I types expressed by FT500 to assess for B-cell mediated host-versus-product (FT500) allo-reactivity. Among the 15 patients, a single FT500 anti-HLA antibody with a mean fluorescence intensity (MFI) level of ≥ 5,000 was detected in two patients, suggesting that a robust B-cell response against FT500 was not evident. As a point of reference, in patients undergoing haplo-identical hematopoietic stem cell transplant, an MFI level ≥ 5,000 has been correlated with a 5-fold increase in risk of graft rejection.

We are currently enrolling the dose-expansion stage of the FT500 Phase 1 clinical trial for patients with non-small cell lung cancer or classical Hodgkin's lymphoma who are refractory to, or have relapsed on, checkpoint inhibitor therapy. We intend to treat up to 15 patients, administering up to six doses of FT500 at 300 million cells per dose, each with IL-2 cytokine support, in combination with the checkpoint inhibitor on which the patient failed or relapsed.

***FT516: iPSC-derived, hnCD16 Engineered NK Cell Product Candidate***

NK cells play a major role in the anti-tumor activity of certain tumor-targeting antibodies. NK cells express CD16, an activating receptor that binds to the Fc domain of IgG antibodies. Once activated through CD16, NK cells are able to destroy antibody-coated tumor cells and secrete cytokines, such as interferon gamma, to potentiate an adaptive immune response. This mechanism of action, referred to as antibody-dependent cellular cytotoxicity (ADCC), is believed to be important for the treatment of a wide range of cancers.

CD16 consists of two genomic variants, 158V and 158F, that elicit high or low binding affinity, respectively, to the Fc domain of IgG antibodies. Numerous clinical studies with FDA-approved tumor-targeting antibodies, including rituximab (FDA-approved for certain cancers of the blood and lymph system), trastuzumab (FDA-approved for certain breast and gastric cancers) and cetuximab (FDA-approved for certain head and neck, non-small cell lung and colorectal cancers), have demonstrated that patients homozygous for the 158V variant, which is present in only about 15% of patients, have improved clinical outcomes. In addition, the expression of CD16 on NK cells has been shown to undergo considerable down-regulation in cancer patients, which can significantly limit anti-tumor activity.

FT516 is an investigational off-the-shelf NK cell cancer immunotherapy derived from a clonal master iPSC line engineered to express a novel CD16 (hnCD16) Fc receptor. Our novel CD16 Fc receptor incorporates two unique features designed to augment the anti-tumor activity of FT516: a high-affinity homozygous 158V variant to promote high binding affinity and a modification to block its cleavage and down-regulation upon NK cell activation.

In preclinical studies, we have shown that FT516 exhibits potent and persistent anti-tumor activity *in vitro* and *in vivo* in multiple tumor cell recognition and killing assays:

- FT516, as compared to conventional NK cells sourced from peripheral blood and from cord blood, exhibits superior direct killing *in vitro* in combination with rituximab in a human lymphoma cell line killing assay (positive for CD20) and in combination with each of trastuzumab and cetuximab in a human ovarian cancer cell line killing assay (positive for both HER2 and EGFR);
- FT516 in combination with rituximab shows a dose-dependent killing response *in vitro* in a CD20+ human lymphoblast-derived B-lymphocyte cell line killing assay;
- FT516 in combination with trastuzumab, as compared to trastuzumab alone, augments anti-tumor activity *in vivo* in a HER2+ ovarian cancer model, where the anti-tumor activity at Week 6 of FT516 plus trastuzumab was durable with no tumor detectable by imaging in 80% of the mice as compared to trastuzumab alone where all mice displayed tumor burden; and
- FT516 in combination with rituximab, as compared to rituximab alone or rituximab in combination with conventional NK cells sourced from peripheral blood, augments anti-tumor activity and promotes prolonged survival *in vivo* in a human lymphoma cancer model, where the median survival following treatment with FT516 plus rituximab exceeded 100 days as compared to approximately 35 days for rituximab alone and for rituximab in combination with conventional NK cells sourced from peripheral blood.

*Hematologic Malignancies*

FT516 is being studied in an ongoing, multi-center Phase 1 clinical trial. To our knowledge, FT516 is the first-ever engineered iPSC-derived cell therapy cleared for clinical investigation in the United States. The Phase 1 study is designed to assess the safety and determine the maximum dose of FT516 in adult patients with certain hematologic malignancies. The trial includes two treatment regimens: FT516 as a monotherapy in patients with relapsed / refractory acute myeloid leukemia (AML) with three separate dose cohorts (90 million cells per dose; 300 million cells per dose; 900 million cells per dose) (Regimen A); and FT516 in combination with CD20-targeted monoclonal antibody therapy in patients with advanced B-cell lymphoma (BCL) who have previously failed or progressed on CD20-targeted monoclonal antibody therapy with four separate dose cohorts (30 million cells per dose; 90 million cells per dose; 300 million cells per dose; 900 million cells per dose) (Regimen B). The treatment schedule consists of three once-weekly doses of FT516, each with IL-2 cytokine support, following outpatient lympho-conditioning. For those patients that are clinically stable at Day 29, a second treatment cycle may be administered.

*Phase 1 Clinical Data in AML*. We have reported interim Phase 1 clinical data on two patients in Regimen A in the first dose cohort (90 million cells per dose) as of a May 18, 2020 cutoff date. Each patient was previously treated with three lines of therapy and was refractory to the most recent line of therapy. No DLTs, no FT516-related SAEs, and no events of any grade of CRS, ICANS, or GvHD were reported by investigators. Following completion of the first 30-day cycle of FT516, the first patient showed no morphologic evidence of leukemia by bone marrow biopsy and had evidence of neutrophil recovery. The protocol-defined response assessment following completion of the second 30-day cycle of FT516 showed stable disease per ELN 2017 criteria in both patients. Dose escalation is currently ongoing in Regimen A.

*Phase 1 Clinical Data in BCL*. We have reported interim Phase 1 clinical data on six patients in Regimen B, including four patients in the second (90 million cells per dose) and third (300 million cells per dose) dose cohorts as of a November 16, 2020 cutoff date. Three of these four patients achieved an objective response, including two complete responses, as assessed by PET-CT scan per Lugano 2014 criteria. No DLTs, no FT516-related SAEs, and no events of any grade of CRS, ICANS, or GvHD were reported by investigators. Additionally, the multi-dose, two-cycle treatment schedule was well-tolerated by each of the four patients, with no FT516-related Grade ≥ 3 AEs reported by investigators. In the first dose cohort (30 million cells per dose), each patient showed progressive disease as assessed by PET-CT scan per Lugano 2014 criteria. Dose escalation is currently ongoing in Regimen B.

*Solid Tumors*

We are also assessing the safety and maximum dose of FT516 in patients with advanced solid tumors. In December 2019, the FDA allowed our second IND application for the clinical investigation of FT516 in combination with monoclonal antibody therapy, including PDL1-, PD-1, EGFR- and HER2-targeted therapeutic antibodies, across a broad range of advanced solid tumors. In September 2020, we initiated a multi-center Phase 1 clinical trial of FT516 in combination with avelumab, an anti-PDL1 checkpoint inhibitor therapy, in patients with advanced solid tumors. The treatment schedule consists of three once-weekly doses of FT516, each with IL-2 cytokine support, following outpatient lympho-conditioning for up to two 30-day cycles. Dose escalation is currently ongoing.

In April 2020, the FDA allowed a third IND application for the clinical investigation of FT516 in patients with recurrent ovarian cancer. The Phase 1 clinical trial, which is sponsored and managed by investigators from the Masonic Cancer Center, University of Minnesota, is designed to assess the safety and determine the maximum dose of FT516 as a monotherapy and in combination with enoblituzumab, an Fc-optimized monoclonal antibody that targets B7-H3, which is expressed on ovarian cancer cells. The treatment schedule consists of three once-weekly doses of FT516, each with IL-2 cytokine support, following outpatient lympho-conditioning.

***FT596: iPSC-derived, hnCD16, CAR19, IL15-RF Engineered NK Cell Product Candidate***

CAR T-cell therapy has recently emerged as a revolutionary and potentially curative therapy for patients with certain hematologic malignancies, including refractory cancers. In 2017, two CAR T-cell therapies were approved by the FDA for the treatment of relapsed / refractory B-cell precursor acute lymphoblastic leukemia (ALL) and relapsed / refractory diffuse large B-cell lymphoma (DLBCL). While most researchers and clinical investigators continue to focus on the development of autologous or allogeneic CAR T-cell therapies, we are developing CAR NK cell product candidates derived from clonal master engineered iPSC lines as off-the-shelf cancer immunotherapies for the treatment of hematologic malignancies and solid tumors.

FT596 is an investigational off-the-shelf CAR NK cell cancer immunotherapy derived from a clonal engineered master iPSC line. FT596 incorporates three anti-tumor functional modalities: a proprietary CAR optimized for NK cell biology that targets B-cell antigen CD19; a novel high-affinity, non-cleavable CD16 (hnCD16) Fc receptor that has been modified to augment antibody-dependent cellular cytotoxicity, enabling targeting of tumor-associated antigens such as CD20; and an IL-15/IL-15 receptor fusion (IL-15RF), a potent cytokine complex that promotes survival, proliferation and trans-activation of NK cells and CD8 T cells. Together, these features are intended to enable multi-antigen targeting, maximize potency and minimize toxicity in treated patients.

In preclinical studies, we have shown that FT596 exhibits potent and persistent anti-tumor activity *in vitro* and *in vivo* in multiple tumor cell recognition and killing assays:

- In a mixed co-culture assay, we have shown increased degranulation (CD107a) and cytokine release (interferon-gamma and TNF-alfa) upon concurrent activation of both the CAR and CD16 receptors in CD19+CD20+ Raji cancer cells with rituximab, as compared to activation of each receptor alone, indicating that dual-antigen engagement may elicit synergistic anti-tumor activity;
- In a humanized mouse model of CD19+ lymphoma, FT596 administered as a monotherapy exhibited durable tumor clearance and extended survival *in vivo* similar to primary CAR T cells; and
- In a mixed cellular composition cytotoxicity assay comprised of CD19+ and CD19- tumor cells, FT596 combined with rituximab effectively eliminated the heterogeneous population of tumor cells, a result that was not observed with single-antigen targeted CAR19 T cells.

We believe these preclinical data demonstrate the anti-tumor potency and the unique multi-antigen targeting functionality of FT596, and the product candidate's potential to effectively overcome CD19 antigen escape.

FT596 is being studied in an ongoing, multi-center Phase 1 clinical trial for the treatment of relapsed / refractory B-cell malignancies. To our knowledge, FT596 is the first cellular immunotherapy engineered with three active anti-tumor components to be cleared for clinical investigation by the FDA. The Phase 1 study is designed to assess the safety and determine the maximum dose of FT596 in up to 123 adult patients in up to four dose cohorts (30 million cells; 90 million cells; 300 million cells and 900 million cells). The trial includes five treatment regimens: Regimen A1 as a monotherapy for patients with relapsed / refractory B-cell lymphoma (BCL); Regimen B1 in combination with rituximab for patients with relapsed / refractory BCL who have previously failed or progressed on rituximab; Regimen B2 in combination with obinutuzumab for patients with relapsed / refractory follicular lymphoma (FL) who have previously failed or progressed on obinutuzumab; Regimen A2 as a monotherapy for patients with chronic lymphocytic leukemia (CLL); and Regimen B3 in combination with obinutuzumab for patients with relapsed / refractory CLL. FT596 is administered as a single dose following outpatient lympho-conditioning. Dose escalation in the FT596 Phase 1 study is currently ongoing in Regimens A1, B1 and A2.

We have reported interim Phase 1 clinical data on two patients as of a September 24, 2020 cutoff date. Each patient was treated in Regimen A1 for relapsed / refractory diffuse large B-cell lymphoma (DLBCL) in the first single-dose cohort (30 million cells as a monotherapy). Each patient was previously treated with at least four lines of therapy. The first patient most recently had disease progression following treatment with CD19-targeting CAR T-cell therapy, was treated with a single dose of 30 million cells of FT596 as a monotherapy, and the Day 29 protocol-defined response assessment showed progressive disease. The second patient was most recently refractory to an experimental combination therapy comprised of *ex vivo* expanded allogeneic NK cells, IL-2, and rituximab, was treated with a single dose of 30 million cells of FT596 as a monotherapy, and the Day 29 protocol-defined response assessment showed partial response as assessed by PET-CT scan per Lugano 2014 criteria. The patient was subsequently treated with a second dose of 30 million cells of FT596 following outpatient lympho-conditioning, which resulted in a deepening response as evidenced by further reduction in both tumor size and metabolic activity as assessed by PET-CT scan per Lugano 2014 criteria. The duration of response was 3.7 months. No DLTs, no FT596-related SAEs, and no events of any grade of CRS, ICANS, or GvHD were reported by investigators in either patient.

In April 2020, the FDA allowed a second IND application for the clinical investigation of FT596 for the prevention of relapse in patients with BCL who have undergone autologous hematopoietic stem cell transplant (HSCT) and are considered high risk for early relapse. The Phase 1 clinical trial, which is sponsored by investigators from the Masonic Cancer Center, University of Minnesota, is designed to assess the safety and determine the maximum dose of FT596 in combination with CD20-targeted monoclonal antibody therapy. The ongoing clinical trial is expected to enroll up to 18 patients in up to three dose cohorts (90 million cells; 300 million cells and 900 million cells). FT596 is administered as a single dose with CD20-targeted monoclonal antibody therapy approximately 30 days following HSCT.

***FT538: iPSC-derived, hnCD16, IL15-RF, CD38KO Engineered NK Cell Product Candidate***

Multiple myeloma is a hematologic malignancy characterized by the proliferation of malignant plasma cells. In multiple myeloma, malignant plasma cells accumulate in the bone marrow and produce abnormal antibodies called M proteins, which can cause kidney damage, bone destruction, and impaired immune function. While multiple approved drugs with novel mechanisms have improved disease management over the past decade, multiple myeloma is rarely curable and a significant number of patients are expected to relapse.

Daratumumab is an IgG1 monoclonal antibody approved by the FDA in November 2015 for the treatment of multiple myeloma. Daratumumab effectively targets CD38, which is expressed on multiple myeloma cells, and induces cell death through multiple mechanisms, including ADCC. However, because CD38 is also expressed on activated NK cells, daratumumab treatment can induce NK cell fratricide, which may impair the effectiveness of ADCC. In addition, NK cell function is often suppressed or absent in patients with multiple myeloma as a result of the cancer itself as well as treatment therapy, further reducing the effectiveness of daratumumab. Collectively, preclinical and clinical observations suggest a potential therapeutic benefit of maintaining NK cell numbers and function to support ADCC in patients with multiple myeloma.

FT538 is an investigational off-the-shelf NK cell cancer immunotherapy derived from a clonal engineered master iPSC line. FT538 incorporates three functional modifications: a novel high-affinity, non-cleavable CD16 (hnCD16) Fc receptor that has been modified to augment ADCC; an IL-15/IL-15 receptor fusion (IL-15RF), a potent cytokine complex that promotes survival, proliferation and trans-activation of NK cells and CD8 T cells; and the complete elimination of CD38 expression to mitigate the potential for NK cell fratricide. Together, these features are intended to augment ADCC, enhance cell persistence and prevent anti-CD38 monoclonal antibody-induced fratricide.

FT538 is being studied in an ongoing, multi-center Phase 1 clinical trial designed to assess the safety and determine the maximum dose of FT538 in up to 105 adult patients in up to four dose cohorts (100 million cells per dose; 300 million cells per dose; 1 billion cells per dose; and 1.5 billion cells per dose). The trial includes two treatment regimens: Regimen A as a monotherapy for patients with relapsed / refractory AML; and Regimen B in combination with daratumumab for patients with relapsed / refractory multiple myeloma who have failed at least two lines of therapy. In addition, the clinical protocol allows, at our discretion, the initiation of a third treatment regimen in combination with elotuzumab, an FDA-approved anti-SLAMF7 monoclonal antibody, for patients with relapsed / refractory multiple myeloma who have failed at least two lines of therapy. FT538 is administered in three once-weekly doses following outpatient lympho-conditioning. Dose escalation is currently ongoing in Regimen A.

In December 2020, the FDA allowed a second IND application for the clinical investigation of FT538 for the treatment of relapsed / refractory AML. The Phase 1 clinical trial, which is sponsored and managed by investigators from the Masonic Cancer Center, University of Minnesota, is designed to assess the safety and determine the maximum dose of FT538 in combination with daratumumab following outpatient lympho-conditioning. FT538 is administered in three once-weekly doses following outpatient lympho-conditioning.

***FT576: iPSC-derived, hnCD16, IL15-RF, CD38-KO, CAR-BCMA Engineered NK Cell Product Candidate***

In addition to CD38 targeting in multiple myeloma, targeting of other tumor-associated antigens expressed on malignant plasma cells has been explored. Of these antigens, the TNF-superfamily member B-cell Maturation Antigen (BCMA) is among the most researched and is under development by multiple groups as a CAR target. Several clinical trials in multiple myeloma have shown promising initial results targeting BCMA with CAR T cells; however, there remains significant opportunity to improve both rates of relapse and treatment of relapsed patients.

In August 2019, we entered into a license agreement with the Max Delbrück Center for Molecular Medicine (MDC) under which we were granted certain exclusive rights to intellectual property covering novel humanized CAR constructs that uniquely and specifically bind BCMA. In data published by MDC scientists, anti-BCMA CAR T cells equipped with its unique humanized extracellular antigen-binding domains show higher affinity and greater specificity than other anti-BCMA antigen-binding domains. These differentiated properties conveyed both greater selectivity in recognizing target B cells and more robust killing of target B cells *in vitro*, including malignant B cells with low expression levels of BCMA. Additionally, in *in vivo* proof-of-concept studies, MDC scientists demonstrated that anti-BCMA CAR T cells mediated anti-tumor activity in xenotransplant mouse models of multiple myeloma and of mature B-cell non-Hodgkin lymphoma, where BCMA surface expression is up to 4-fold lower as compared to mouse models of multiple myeloma.

FT576 is an investigational off-the-shelf NK cell cancer immunotherapy derived from a clonal engineered master iPSC line. FT576 incorporates four functional modifications: a proprietary CAR that targets BCMA; a novel high-affinity, non-cleavable CD16 (hnCD16) Fc receptor that has been modified to augment ADCC; an IL-15/IL-15 receptor fusion (IL-15RF), a potent cytokine complex that promotes survival, proliferation and trans-activation of NK cells and CD8 T cells; and the complete elimination of CD38 expression to mitigate the potential for NK cell fratricide. Together, these features are intended to enable multi-antigen targeting of myeloma cells, augment ADCC, enhance cell persistence and prevent anti-CD38 monoclonal antibody-induced fratricide.

In December 2020, the FDA allowed our IND application for the clinical investigation of FT576 for the treatment of patients with relapsed / refractory multiple myeloma who have failed at least two lines of therapy. To our knowledge, FT576 is the first cellular immunotherapy engineered with four active anti-tumor components to be cleared for clinical investigation by the FDA.

We plan to conduct GMP manufacture and product release testing of FT576 in the first half of 2021. Subject to manufacture of FT576 in conformance with its release specifications, and submission of any additional non-clinical data requested by the FDA, we plan to initiate a multi-center Phase 1 clinical trial to assess the safety and determine the maximum dose of FT576 following

outpatient lympho-conditioning in up to 168 adult patients. The trial is expected to include four treatment regimens: Regimen A as a single dose of FT576; Regimen A1 as two fractionated doses of FT576; Regimen B as a single dose of FT576 in combination with daratumumab; and Regimen B1 as two fractionated doses of FT576 in combination with daratumumab.

***FT536: iPSC-derived, hnCD16, IL15-RF, CD38-KO, CAR-MICA/B Engineered NK Cell Product Candidate***

The major histocompatibility complex (MHC) class I related proteins A (MICA) and B (MICB) are induced by cellular stress, damage or transformation, and the expression of MICA and MICB proteins has been reported for many tumor types. Cytotoxic lymphocytes, such as NK cells and CD8+ T cells, can detect and bind the membrane-distal alpha-1 and -2 domains of MICA/B, activating a potent cytotoxic response. However, advanced cancer cells frequently evade immune cell recognition by proteolytic shedding of these domains. The clinical importance of proteolytic shedding is reflected in the association of high serum concentrations of shed MICA/B with disease progression in many solid tumors.

Several recent publications have shown that therapeutic antibodies targeting the membrane-proximal alpha-3 domain strongly inhibited MICA/B shedding, resulting in a substantial increase in the cell surface density of MICA/B and restoration of NK cell-mediated tumor immunity. In addition, a recent publication by scientists from Dana-Farber Cancer Institute (DFCI) demonstrated that cancers with B2M and JAK1 inactivating mutations resulting in loss of MHC Class I expression can be effectively targeted with alpha-3 domain-specific antibodies to restore NK cell-mediated immunity against solid tumors resistant to cytotoxic T cells. Therapeutic approaches aimed at targeting the alpha-3 domain of MICA/B therefore represent a potentially promising novel strategy to overcome this prominent evasion mechanism as a means of restoring anti-tumor immunity in patients with solid tumors.

In April 2020, we entered into a license agreement with DFCI under which we were granted certain exclusive rights to intellectual property covering novel antibody fragments that uniquely and specifically bind the alpha-3 domain of MICA/B. We are developing FT536, a preclinical product candidate which incorporates four functional modifications: a proprietary CAR that targets the alpha-3 domain of MICA/B; a novel high-affinity, non-cleavable CD16 (hnCD16) Fc receptor that has been modified to augment ADCC; an IL-15/IL-15 receptor fusion (IL-15RF), a potent cytokine complex that promotes survival, proliferation and trans-activation of NK cells and CD8 T cells; and the complete elimination of CD38 expression to mitigate the potential for NK cell fratricide. We plan to submit an IND application during the second half of 2021 to initiate a multi-center Phase 1 clinical trial of FT536 for the treatment of solid tumors.

***FT819: iPSC-derived, TCR-KO, TRAC-targeted CAR19 Engineered T-Cell Product Candidate***

In addition to our development of iPSC-derived CAR NK cell product candidates, we are also developing CAR T-cell product candidates derived from clonal master engineered iPSC lines as off-the-shelf cancer immunotherapies for the treatment of hematologic malignancies and solid tumors.

In September 2016, we announced a multi-year partnership with Memorial Sloan Kettering Cancer Center for the development of off-the-shelf engineered T-cell product candidates using clonal master iPSC lines and, in July 2019, we extended the partnership for an additional three years. Research and development activities under the collaboration are being led by Dr. Michel Sadelain, Director of the Center for Cell Engineering and the Stephen and Barbara Friedman Chair at Memorial Sloan Kettering Cancer Center.

In connection with the formation of our partnership with Memorial Sloan Kettering Cancer Center, we exclusively licensed from Memorial Sloan Kettering foundational intellectual property covering iPSC-derived cellular immunotherapy, including T cells and NK cells derived from iPSCs engineered with CARs, for human therapeutic use. We also secured an exclusive option to exclusively license intellectual property arising from all research and development activities under the partnership. In May 2018, we licensed from Memorial Sloan Kettering Cancer Center additional intellectual property covering compositions of novel CAR constructs, including the 1XX CAR construct, and of genetically-engineered CAR T cells, including methods of making these cells using CRISPR for certain targeted gene modifications. Embodiments of this additional intellectual property include preclinical data published by Dr. Sadelain demonstrating that directing a CD19-specific CAR to the T-cell receptor (TCR) alpha constant (TRAC) locus results in uniform CAR expression in human peripheral blood T cells, enhances T-cell potency, and delays effector T-cell differentiation and exhaustion, and that CAR T cells utilizing a novel 1XX CAR signaling domain exhibited enhanced antitumor efficacy, persistence and long-term cytotoxicity as well as a decrease in T-cell exhaustion.

Under our collaboration with Memorial Sloan Kettering Cancer Center, we are developing FT819, an off-the-shelf CAR T-cell cancer immunotherapy derived from a clonal engineered master iPSC line with complete elimination of TCR expression and the novel 1XX CAR targeting CD19 inserted into the TRAC locus. Together, these features are intended to induce antigen-specific cytotoxicity, enhance CAR activity through TRAC-regulated expression and completely eliminate TCR expression to mitigate GvHD.

In preclinical studies, we have shown that FT819 cells:

- display antigen-specific anti-tumor potency *in vitro*, including cytokine release and targeted cellular cytotoxicity, comparable to peripheral blood CD19-specific CAR T cells;
- do not respond or proliferate against HLA-mismatched (CD19-) peripheral blood mononuclear cells as targets in a mixed lymphocyte reaction, indicating the risk of GvHD is alleviated;
- effectively control tumor progression *in vivo* comparable to peripheral blood CD19-specific CAR T cells in a preclinical mouse model of acute lymphoblastic leukemia; and
- enhance tumor clearance and durable control of leukemia *in vivo*, as compared to primary CAR19 T cells, in a xenograft mouse model of disseminated lymphoblastic leukemia.

In 2020, the FDA allowed our IND application for the clinical investigation of FT819 for the treatment of certain relapsed / refractory B-cell leukemias and lymphomas. We have completed the first GMP manufacturing campaign for FT819, and we are currently conducting product release testing of FT819 to assess conformance with its release specifications. Subject to successful release of FT819 and submission of any additional non-clinical data requested by the FDA, we plan to initiate a multi-center Phase 1 clinical trial to assess the safety and determine the maximum dose of FT819 following outpatient lympho-conditioning in up to 297 adult patients across three types of B-cell leukemias and lymphomas. Each disease type will enroll independently and assess three treatment regimens: Regimen A as a single dose of FT819; Regimen B as a single dose of FT819 with IL-2 cytokine support; and Regimen C as three fractionated doses of FT819.

**Our Allogeneic Cellular Immunotherapy Pipeline**

***ProTmune™***

Allogeneic HSCT has been performed globally for decades with curative intent in patients with a wide range of hematologic malignancies and rare genetic disorders. The procedure involves transferring hematopoietic cells sourced from a healthy donor to a patient following the administration of chemotherapy and/or radiation therapy. The biological properties of the various cell populations present in the allogeneic hematopoietic cell graft play an essential role in determining outcomes of HSCT. Donor-sourced $CD34^+$ cells have the unique ability to engraft and reconstitute a new blood and immune system, and donor-sourced immune cells, such as T cells, have an important protective role following HSCT in eradicating residual cancer cells and providing protection against life-threatening infections. The engraftment of donor-sourced $CD34^+$ cells is essential for successful reconstitution, and any delay in, or failure of, engraftment leaves a patient severely immuno-compromised and exposed to exceedingly high risk of early morbidity and mortality. Additionally, while the donor-sourced immune cells impart a critical immunotherapeutic effect, allo-reactive T cells can cause GvHD, a serious complication where donor-sourced T cells recognize antigens on a patient's cells as foreign and attack the patient's cells.

According to the Center for International Blood and Marrow Transplant Research, approximately 30,000 allogeneic HSCT procedures are performed globally each year. Hematopoietic cells for use in allogeneic HSCT can be obtained from multiple donor sources including umbilical cord blood, bone marrow and mobilized peripheral blood (mPB). Approximately 65% of allogeneic HSCT procedures utilize mPB as the donor hematopoietic cell source. While the use of mPB is associated with faster rates of neutrophil engraftment compared to other cell sources like bone marrow and umbilical cord blood, approximately 35-60% of patients undergoing mPB HSCT develop acute GvHD and 70-80% of patients undergoing mPB HSCT experience at least one severe infection within the first 180 days following HSCT. Additionally, approximately 50% of patients undergoing HSCT experience cancer relapse or die within the first two years following HSCT. We believe our cell programming approach has the potential to reduce the three leading causes of morbidity and mortality associated with allogeneic HSCT – namely, GvHD, severe infections and disease relapse – and to improve outcomes in patients undergoing allogeneic HSCT.

We are developing ProTmune as an investigational programmed cellular immunotherapy for use as a next-generation allogeneic HSCT cell graft. ProTmune is produced by modulating donor-sourced mPB *ex vivo* with two small molecules, 16,16-dimethyl prostaglandin E2 (FT1050) and dexamethasone (FT4145), to enhance the biological properties and therapeutic function of the graft's cells. The programmed mPB graft is administered to a patient as a one-time intravenous therapy. Based on preclinical data, we believe ProTmune has the potential to suppress the GvHD response and maintain the anti-tumor, or graft-versus-leukemia (GvL), activity of donor T cells. We have demonstrated that FT1050-FT4145 programmed $CD4^+$ and $CD8^+$ T cells of mPB are functionally less allo-reactive *in vitro*, exhibiting a decrease both in the expression levels of T-cell activation markers, including ICOS and 41BB, and in the production of pro-inflammatory cytokines, and an increase in the production of potent anti-inflammatory cytokines including IL-10.

We are conducting a multi-center Phase 1/2 clinical trial of ProTmune in adult subjects with hematologic malignancies undergoing mPB HSCT following myeloablative conditioning, a clinical trial which we refer to as the PROTECT study. The primary objectives of the PROTECT study are to evaluate safety and tolerability, and to assess the potential of ProTmune to prevent acute GvHD, which is a leading cause of morbidity and mortality in patients undergoing HSCT. There are currently no FDA-approved therapies for the prevention of GvHD in patients undergoing allogeneic HSCT, giving rise to a significant unmet medical need. All subjects in the PROTECT study are being followed for a period of two years following HSCT.

In December 2018, we reported clinical data from the Phase 1 stage of PROTECT. The Phase 1 stage of PROTECT included seven subjects. Underlying hematologic diseases included three subjects with acute lymphoblastic leukemia (ALL), three with acute myeloid leukemia (AML) and one with myelodysplastic syndrome (MDS). As of a November 26, 2018 data cut-off, five of seven subjects remained on study with median time on study of 516 days [Day 151 – 616], and the following key safety and efficacy data were reported:

- ProTmune was well-tolerated. There were no events of graft failure and no serious adverse events related to ProTmune reported by investigators.
- There were no reported events of cancer relapse.
- At Day 100, all seven subjects receiving ProTmune were alive and relapse-free; and three subjects experienced acute GvHD during the first 100 days following HSCT, all of whom responded to standard-of-care steroid treatment. The median time to resolution of the maximum GvHD grade was 7 days [range: 5-8 days].
- At Day 365, five of seven subjects receiving ProTmune were alive and relapse-free, with non-relapse mortality occurring in two subjects (Subject 1 on Day 228; Subject 3 on Day 151); and three of seven subjects were alive, relapse-free and without moderate-to-severe chronic GvHD.

The ongoing Phase 2 stage of PROTECT is a randomized, controlled and double-blinded clinical trial assessing the safety and efficacy of ProTmune in up to 80 adult subjects with hematologic malignancies undergoing matched unrelated donor HSCT following myeloablative conditioning. In November 2019, we reported that the Phase 2 stage of PROTECT was fully enrolled. Subjects were randomized, in a 1:1 ratio, to receive either ProTmune or a conventional matched unrelated donor mobilized peripheral blood cell graft. The primary efficacy endpoint of PROTECT is cumulative incidence of Grades 2-4 acute GvHD by Day 100 following HSCT, where prospective clinical studies have shown that 35% to 60% of patients undergoing matched unrelated donor transplant experience Grades 2-4 acute GvHD. The secondary efficacy endpoint of PROTECT is the proportion of subjects alive without relapse and without moderate or severe chronic GvHD by Day 365 following HSCT. Additional endpoints, such as rates of cancer relapse, chronic GvHD, non-relapse mortality, and overall survival, are also being assessed. We expect to report clinical results of the primary and secondary efficacy endpoints of PROTECT in the first half of 2021.

In June 2016, the FDA granted Fast Track designation for ProTmune for the reduction of incidence and severity of acute GvHD in patients undergoing allogeneic HSCT. In September 2016, the FDA granted Orphan Drug Designation and, in October 2016, the European Commission granted Orphan Medicinal Product Designation, for ProTmune. The orphan designation granted in each jurisdiction broadly covers subjects undergoing allogeneic HSCT across diseases for which the procedure is performed, including blood cancers and genetic disorders.

**Our Partnerships**

***Janssen Biotech***

In April 2020, we entered into a collaboration and option agreement with Janssen Biotech, Inc. (Janssen), part of the Janssen Pharmaceutical Companies of Johnson & Johnson, for the development and commercialization of off-the-shelf, iPSC-derived CAR NK cell and CAR T-cell product candidates directed to up to four tumor-associated antigen targets.

We are conducting research and preclinical development of collaboration candidates. We granted to Janssen, during a specified period of time, the right to exercise an exclusive option and obtain an exclusive license under certain intellectual property rights to develop and commercialize each collaboration candidate. Subject to the exercise of such exclusive option, Janssen is solely responsible for the worldwide clinical development and commercialization of such collaboration candidate. Upon attainment of clinical proof-of-concept, we have the right to elect to co-commercialize and share equally in the profits and losses in the United States, subject to sharing in certain development costs, of such collaboration candidate. We are primarily responsible for the manufacture, at Janssen’s cost, of collaboration candidates.

Under the terms of the agreement, we received $100.0 million as of the effective date of the agreement, of which $50.0 million was an upfront, non-refundable and non-creditable cash payment and $50.0 million was in the form of an equity investment by Johnson & Johnson Innovation - JJDC, Inc. Additionally, as consideration for our conduct of research, preclinical development and IND-enabling activities for collaboration candidates, Janssen pays us research and development fees as set forth in an annual budget.

We are eligible to receive upon the achievement of specified development, regulatory and sales milestones (i) with respect to the first tumor-associated antigen target, payments of up to $898.0 million for the first collaboration candidate and up to $460.0 million for each additional collaboration candidate; and with respect to each of the second, third and fourth tumor-associated antigen targets, payments of up to $706.0 million for each of the first collaboration candidates and up to $340.0 million for each additional collaboration candidate. Certain milestone payments are subject to reduction in the event we elect to co-commercialize and share equally in the profits and losses in the United States of a collaboration candidate. We are further eligible to receive double-digit tiered royalties ranging up to the mid-teens on net sales of collaboration candidates that are commercialized by Janssen, subject to reduction under certain circumstances. No milestone or royalty payments have been received by us as of December 31, 2020.

Janssen may terminate the agreement with respect to one or more tumor-associated antigen targets, or in its entirety, at any time on or after the second anniversary of the effective date of the agreement, and we may terminate the agreement with respect to a particular tumor-associated antigen target if a collaboration candidate has not been selected for IND-enabling studies for such tumor-associated antigen target within specified time periods under certain conditions. The agreement contains customary provisions for termination by either party in the event of a material breach of the agreement, subject to cure, by the other party and in the event of any bankruptcy, insolvency or similar events with respect to the other party.

***Ono Pharmaceutical***

In September 2018, we entered into a collaboration and option agreement with Ono Pharmaceutical Co. Ltd. (Ono) for the joint development and commercialization of two off-the-shelf, iPSC-derived CAR T-cell product candidates. The first off-the-shelf, iPSC-derived CAR T-cell candidate (Candidate 1) targets an antigen expressed on certain lymphoblastic leukemias, and the second off-the-shelf, iPSC-derived CAR T-cell candidate (Candidate 2) targets a novel antigen identified by Ono expressed on certain solid tumors (each a Candidate and, collectively, the Candidates). We granted to Ono, during a specified period of time, an option to obtain an exclusive license under certain intellectual property rights to develop and commercialize (a) Candidate 1 in Asia, where we retained rights for development and commercialization in all other territories of the world and (b) Candidate 2 in all territories of the world, where we retain rights to co-develop and co-commercialize Candidate 2 in the United States and Europe under a joint arrangement with Ono under which we are eligible to share at least 50% of the profits and losses. For each Candidate, the option expires upon the earliest of: (a) the achievement of the pre-defined preclinical milestone, (b) termination by Ono of research and development activities for the Candidate and (c) the date that is the later of (i) four years after the Effective Date and (ii) completion of all applicable activities contemplated under the joint development plan. We maintain worldwide rights of manufacture for Candidates.

Under the terms of the agreement, Ono paid us an upfront, non-refundable and non-creditable payment of $10.0 million in connection with entering into the agreement. Additionally, as consideration for our conduct of research and preclinical development under a joint development plan, Ono pays us annual research and development fees set forth in the annual budget included in the joint development plan, which fees are estimated to be $20.0 million in aggregate over the course of the joint development plan.

In December 2020, we entered into a letter agreement with Ono pursuant to which Ono nominated and delivered to us proprietary antigen binding domains targeting an antigen expressed on certain solid tumors for incorporation into Candidate 2. In connection with such nomination and delivery, Ono paid us a milestone fee of $10.0 million for further research and development of Candidate 2. In addition, Ono terminated further development with respect to Candidate 1, and we retain all rights to research, develop and commercialize Candidate 1 throughout the world without any obligation to Ono.

Ono has agreed to pay us up to an additional $20.0 million, subject to the exercise by Ono of its option to develop and commercialize Candidate 2. Subject to Ono’s exercise of the option and to the achievement of certain clinical, regulatory and commercial milestones with respect to Candidate 2 in specified territories, we are entitled to receive an aggregate of up to $885.0 million in milestone payments for Candidate 2, with the applicable milestone payments for the United States and Europe subject to reduction by 50% if we elect to co-develop and co-commercialize Candidate 2 as described above. We are also eligible to receive tiered royalties ranging from the mid-single digits to the low-double digits based on annual net sales by Ono of Candidate 2 in specified territories, with such royalties subject to certain reductions.

The agreement will terminate with respect to a Candidate if Ono does not exercise its option for a Candidate within the option period, or in its entirety if Ono does not exercise any of its options for the Candidates within their respective option periods. In addition, either party may terminate the agreement in the event of breach, insolvency or patent challenges by the other party; provided, that Ono may terminate the agreement in its sole discretion (x) on a Candidate-by-Candidate basis at any time after the second anniversary of the effective date of the agreement or (y) on a Candidate-by-Candidate or country-by-country basis at any time after the expiration of the option period, subject to certain limitations. The agreement will expire on a Candidate-by-Candidate and country-by-country basis upon the expiration of the applicable royalty term, or in its entirety upon the expiration of all applicable payment obligations under the agreement.

## Our Intellectual Property

### *Overview*

We seek to protect our product candidates and our cell programming technology through a variety of methods, including seeking and maintaining patents intended to cover our products and compositions, their methods of use and processes for their manufacture, our platform technologies and any other inventions that are commercially important to the development of our business. We seek to obtain domestic and international patent protection and, in addition to filing and prosecuting patent applications in the United States, we typically file counterpart patent applications in additional countries where we believe such foreign filing is likely to be beneficial, including Europe, Japan, Canada, Australia and China. We continually assess and refine our intellectual property strategy in order to best fortify our position, and file additional patent applications when our intellectual property strategy warrants such filings. We also rely on know-how, continuing technological innovation and in-licensing opportunities to develop and maintain our proprietary position. We have entered into exclusive license agreements with various academic and research institutions to obtain the rights to use certain patents for the development and commercialization of our product candidates.

As of February 9, 2021, our intellectual property portfolio is composed of over 350 issued patents and 150 patent applications that we license from academic and research institutions, and over 250 issued patents or pending patent applications that we own. These patents and patent applications generally provide us with the rights to develop our product candidates in the United States and worldwide. This portfolio covers compositions of programmed cellular immunotherapies, our cell programming approach for enhancing the therapeutic function of cells *ex vivo*, and our platform for industrial-scale iPSC generation and engineering. We believe that we have a significant intellectual property position and substantial know-how relating to the programming of hematopoietic and immune cells and to the derivation, genetic engineering, and differentiation of iPSCs.

We cannot be sure that patents will be granted with respect to any of our owned or licensed pending patent applications or with respect to any patent applications we may own or license in the future, nor can we be sure that any of our existing patents or any patents we may own or license in the future will be useful in protecting our technology. Please see “Risk Factors—Risks Related to Our Intellectual Property” for additional information on the risks associated with our intellectual property strategy and portfolio.

### *Intellectual Property Relating to iPSC Technology and Platform*

As of February 9, 2021, we own over 20 patent families directed to programming the fate of somatic cells *ex vivo*, including patent applications pending in the U.S. and internationally related to our platform for industrial-scale iPSC generation and applications related to differentiation of iPSCs into specialized cells with therapeutic potential. These patent applications cover our proprietary small molecule-enhanced iPSC platform, including novel reprogramming factors and methods of reprogramming to obtain iPSCs. Our intellectual property portfolio also includes gene editing compositions and methods of genetic engineering, as well as methods of directing the fate of cells to obtain homogenous cell populations in the hematopoietic lineage, including $CD34^+$ cells, T cells and NK cells. Our proprietary intellectual property enables highly-efficient iPSC derivation, selection, engineering, and clonal expansion while maintaining genomic stability. Any U.S. patents issued from these patent applications will have statutory expiration dates ranging from 2031 to 2041.

Additionally, we have licensed from the Whitehead Institute for Biomedical Research a portfolio of four patent families including issued patents and pending applications broadly applicable to the reprogramming of somatic cells. Our license is exclusive in commercial fields, including for drug discovery and therapeutic purposes. This portfolio covers the generation of human iPSCs from somatic cells and, as of February 9, 2021, includes 16 issued U.S. patents (including U.S. Patents 8,071,369, 7,682,828 and 9,497,943) claiming compositions used in the reprogramming of mammalian somatic cells to a less differentiated state (including to a pluripotent state), and methods of making a cell more susceptible to reprogramming. Specifically, the portfolio includes a composition of matter patent issued in the United States covering a cellular composition comprising a somatic cell having an exogenous nucleic acid that encodes an OCT4 protein. OCT4 is the key pluripotency gene most commonly required for the generation of iPSCs. These issued patents and any U.S. patents that may issue from these pending patent applications will have statutory expiration dates ranging from 2024 to 2029.

We also have exclusive licenses from The Scripps Research Institute to a portfolio of seven patent families relating to compositions and methods for reprogramming mammalian somatic cells, which covers non-genetic and viral-free reprogramming mechanisms, including the use of various small molecule classes and compounds and the introduction of cell-penetrating proteins to reprogram mammalian somatic cells. This portfolio includes issued U.S. patents (including U.S. Patents 8,044,201 and 8,691,573) that provide composition of matter protection for a class of small molecules, including thiazovivin, that is critical for inducing the generation, and maintaining the pluripotency, of iPSCs, and compositions and methods of using the small molecule. Any issued U.S. patents and any U.S. patents that may issue from patent applications pending in this portfolio will have statutory expiration dates ranging from 2026 to 2031.

We also have exclusively licensed from the J. David Gladstone Institutes (Gladstone) intellectual property covering the generation of iPSCs using CRISPR-mediated gene activation. This approach for inducing pluripotency uses CRISPR to directly target a specific location of the genome and activate endogenous gene expression, and does not rely on established methods of cellular reprogramming that require the transduction of multiple transcription factors. Any U.S. patents that may issue from patent applications pending in the U.S. and internationally in this portfolio will have a statutory expiration date in 2038.

We also have licensed exclusive rights to four families of patent applications from the University of Minnesota. This portfolio includes over 40 issued patents or pending patent applications in the United States and foreign jurisdictions directed to compositions of NK cells, including adaptive memory NK cells and genetically-engineered NK cells, and therapeutic strategies for the treatment of cancer using these NK cells. These applications also describe methods of enhancing NK cell cytotoxicity by genetically engineering the CD16 Fc receptor in immune cells, including iPSC-derived NK cells, and describe methods of increasing NK cell tumor specificity and cytotoxicity by incorporating CARs on NK cells. Any U.S. patents that may issue from patent applications pending in this portfolio will have statutory expiration dates between 2035 and 2038.

We also have exclusively licensed from The Memorial Sloan-Kettering Cancer Center (MSK) intellectual property covering the production and composition of iPSC-derived T cells and their use in cellular immunotherapy, and have a license from MSK to two patent families covering novel CAR constructs as well as off-the-shelf CAR T cells, including the use of CRISPR and other innovative technologies for their production. Collectively, this portfolio covers compositions of CAR constructs, compositions of T cells and NK cells derived from pluripotent cells which are engineered with CARs, methods of engineering pluripotent cell lines, methods of deriving CAR-T cells from CAR expressing pluripotent stem cells, and methods of using CRISPR for producing off-the-shelf T-cell immunotherapies. Any U.S. patents that may issue from patent applications pending in this portfolio will have statutory expiration dates between 2034 and 2038.

In addition, we have licensed exclusive rights from the Max Delbruck Center for Molecular Medicine (MDC) to intellectual property directed to novel humanized antibody fragments, antigen-binding domains and CAR constructs that uniquely target and specifically bind B-cell Maturation Antigen (BCMA). Under the license agreement, we are granted an exclusive license for use in allogeneic engineered pluripotent stem cells. Any patents issuing from patent applications pending in the U.S. and internationally in this portfolio will have statutory expiration dates between 2033-2037.

***Intellectual Property Relating to CRISPR Engineering***

In August 2019, we entered into a license agreement with Inscripta, Inc. Under the license agreement, we obtained a royalty-free, irrevocable license to a patent portfolio covering the composition, production and use of MAD7, a novel gene-editing CRISPR endonuclease from the *Eubacterium rectale* genome. The intellectual property includes issued patents and pending applications broadly applicable to MAD7 and the editing of mammalian cells. Our license covers the making and using of MAD7 for editing iPSCs, making master engineered iPSC lines and using master engineered iPSC lines to manufacture human therapeutic products. These issued patents and any U.S. patents that may issue from these pending patent applications will have statutory expiration dates around 2037.

***Intellectual Property Relating to the Programming of Hematopoietic Cells***

As of February 9, 2021, we own 14 families of U.S. and foreign patents and pending patent applications covering our cell programming technology and compositions of programmed cellular immunotherapies. This portfolio includes over 120 issued patents or pending patent applications relating to methods of programming the biological properties and therapeutic function of cells *ex vivo*, and the resulting therapeutic compositions of hematopoietic and immune cells. Patents and patent applications in this portfolio include claims covering (i) therapeutic compositions of hematopoietic and immune cells, including T cells, NK cells, and $CD34^+$ cells, that have been programmed *ex vivo* with one or more agents to optimize their therapeutic function for application in oncology and immune disorders and (ii) methods of programming cells including by the activation or inhibition of therapeutically-relevant genes and cell-surface proteins, such as those involved in the homing, proliferation and survival of hematopoietic cells or those involved in the persistence, proliferation and reactivity of immune cells. Any U.S. patents within this portfolio that have issued or may yet issue from pending patent applications will have statutory expiration dates between 2030 and 2041.

Additionally, we have an exclusive license to an intellectual property portfolio consisting of two families of issued patents and pending patent applications co-owned by the Children's Medical Center Corporation and The General Hospital Corporation. As of February 9, 2021, we currently have exclusive rights to over 50 issued patents or patent applications in the United States and worldwide relating to methods for programming hematopoietic stem cells *ex vivo* using modulators that up-regulate the prostaglandin signaling pathway or its downstream mediators. These patent rights consist of issued patents (including U.S. Patents 8,168,428 and 8,563,310) claiming methods for the *ex vivo* programming of hematopoietic stem cells using FT1050, including hematopoietic stem cells obtained from mobilized peripheral blood, cord blood, and bone marrow. Pending patent applications in the United States and foreign jurisdictions are directed to therapeutic compositions of hematopoietic stem cells in which the cells have been modulated by increasing prostaglandin activity, methods of preparing these compositions, and methods of promoting hematopoietic reconstitution, expansion and self-renewal using modulators that increase prostaglandin signaling activity. Any U.S. patents within this portfolio that have issued or may yet issue will have a statutory expiration date in 2027.

We have also licensed exclusive rights to two families of issued patents and patent applications from the Indiana University Research and Technology Corporation. This portfolio includes patent applications claiming methods of enhancing HSCT procedures by altering prostaglandin activity in hematopoietic stem cells as well as an issued U.S. patent and patent applications claiming methods of enhancing viral transduction efficiency in the genetic engineering of stem cells, including hematopoietic stem cells. These applications describe methods of increasing mobilization of stem cells from a stem cell donor, and methods for increasing hematopoietic stem cells homing and engraftment in a stem cell transplant recipient. One family of applications is directed to preferentially modulating certain receptors present on hematopoietic stem cells to increase the therapeutic potential of such cells for homing and engraftment. Claims in these applications specifically cover the modulation of mobilized peripheral blood by altering prostaglandin activity and methods for increasing viral transduction efficiency for gene therapy. Any U.S. patents that have issued or that may issue from patent applications in this portfolio will have statutory expiration dates between 2029 and 2030.

**Our Material Technology License Agreements**

***The University of Minnesota***

In December 2016, we entered into a license agreement with the Regents of the University of Minnesota for rights relating to compositions and methods relating to NK cells, to modifications of cytotoxic receptors naturally expressed on NK cells including the CD16 Fc receptor, and to CARs for expression on NK cells. Under our agreement with the University of Minnesota, we acquired an exclusive royalty-bearing, sublicensable, worldwide license to make, use and sell licensed products in all fields for commercial purposes. The licensed patent rights are described in more detail above under "Intellectual Property Relating to the Programming of Hematopoietic Cells." The University of Minnesota retains the right to practice the patent rights for research, teaching and educational purposes, including in corporate-sponsored research subject to certain limitations during the initial three years of the license agreement. The University of Minnesota also retains the right to license other academic and non-profit research institutes to practice the patent rights for research, teaching and educational purposes, but not for corporate-sponsored research. Our license is also subject to pre-existing rights of the U.S. government.

Under the terms of the license agreement, we are required to pay the University of Minnesota an annual license maintenance fee during the term of the agreement, and are also required to make payments of up to $4.6 million for development, regulatory and commercial milestones achieved with respect to each of the first three licensed products. If commercial sales of a licensed product commence, we will also be required to pay royalties at percentage rates in the low-single digits on net sales of licensed products. Our royalty payments are subject to reduction for any third-party payments required to be made until a minimum royalty percentage has been reached. In the event that we sublicense the patent rights, the University of Minnesota is also entitled to receive a percentage of the sublicensing income received by us.

Under the license agreement with the University of Minnesota, we are obligated to use commercially reasonable efforts to develop and make commercially available licensed products. In particular, we are required to conduct activities toward specific development milestones of licensed products on an annual basis.

The agreement will continue until the abandonment of all patent rights or expiration of the last to expire licensed patent. The University of Minnesota may terminate the agreement if we default in the performance of any of our obligations and fail to cure the default within a specified grace period. The University of Minnesota may also terminate the agreement if we cease to carry out our business or become bankrupt or insolvent. We may terminate the agreement for any reason upon prior written notice to the University of Minnesota and payment of all amounts due to the University of Minnesota through the date of termination.

***Memorial Sloan Kettering Cancer Center***

In May 2018, we entered into an amended and restated license agreement with Memorial Sloan Kettering Cancer Center. The agreement amends and restates the exclusive license agreement we entered into with Memorial Sloan Kettering Cancer Center in August 2016, under which we obtained rights relating to compositions and methods covering iPSC-derived cellular immunotherapy,

including T cells and NK cells derived from iPSCs engineered with CARs. Pursuant to the amended and restated license agreement, we continue to hold exclusive rights to the foregoing patents and patent applications, and obtained additional licenses to certain patents and patent applications relating to compositions and methods covering novel CAR constructs as well as off-the-shelf CAR T cells, including the use of CRISPR and other innovative technologies for their production.

Under our amended and restated agreement with Memorial Sloan Kettering Cancer Center, we have royalty-bearing worldwide licenses to make, use and sell licensed products in all fields for human therapeutic uses. The licensed patent rights are described in more detail above under "Intellectual Property Relating to iPSC Technology." For those patent families where our rights are exclusive, Memorial Sloan Kettering Cancer Center retains the right to practice the patent rights for research, teaching and non-clinical research purposes, and to license other academic and non-profit research institutes to practice the patent rights for research, teaching and non-clinical research purposes. Our licenses are also subject to pre-existing rights of the U.S. government.

Under the terms of the amended and restated agreement, we are required to pay Memorial Sloan Kettering Cancer Center an annual license maintenance fee during the term of the agreement, and are also required to make payments of up to $12.5 million for development, regulatory and commercial milestones achieved with respect to each licensed products. If commercial sales of a licensed product commence, we will also be required to pay royalties at percentage rates up to the high-single digits on net sales of licensed products. Our royalty payments are subject to reduction for any third-party payments required to be made until a minimum royalty percentage has been reached. In the event that we sublicense the patent rights, Memorial Sloan Kettering Cancer Center is also entitled to receive a percentage of the sublicensing income received by us. Additionally, in the event a licensed product achieves a specified clinical milestone, Memorial Sloan Kettering Cancer Center is then eligible to receive additional milestone payments, where the amount of such payments owed to Memorial Sloan Kettering Cancer Center are contingent upon certain increases in the price of our common stock following the date of achievement of such clinical milestone.

Under the amended and restated agreement with Memorial Sloan Kettering Cancer Center, we are obligated to use commercially reasonable efforts to develop and make commercially available licensed products. In particular, we are required to conduct activities and commit a minimum amount of funding toward specific development milestones of licensed products on an annual basis.

The agreement will continue until the abandonment of all patent rights or expiration of the last to expire licensed patent. Memorial Sloan Kettering Cancer Center may terminate the agreement if we default in the performance of any of our obligations and fail to cure the default within a specified grace period, if we cease to carry out our business or become bankrupt or insolvent, or if we institute a proceeding to challenge the patent rights. We may terminate the agreement for any reason upon prior written notice to Memorial Sloan Kettering Cancer Center.

***Max Delbruck Center***

In December 2018, we entered into a license agreement with Max Delbruck Center for Molecular Medicine (MDC) for rights relating to novel humanized antibody fragments, antigen-binding domains and CAR constructs that uniquely target and specifically bind B-cell Maturation Antigen (BCMA). Under our license agreement with MDC, we acquired an exclusive royalty-bearing, sublicensable, worldwide license to make, use and sell products covered by the licensed patent rights, and to perform licensed processes, in each case, using cells derived from allogeneic engineered stem cells. MDC retains a non-exclusive right to use the technology for its own internal research, teaching, and educational purposes.

Under the terms of the license agreement, we are required to pay to MDC an annual license maintenance fee during the term of the agreement. We also are required to make product development, regulatory and sales milestones payments to MDC of up to $11 million per product. If commercial sales of a licensed product commence, we will pay MDC royalties at percentage rates ranging in the low single digits on net sales of licensed products in countries where such product is protected by patent rights. Our obligation to pay royalties continues on a country by country basis until the expiration of all licensed patent rights covering licensed products in such country, and our royalty payments will be reduced by other payments we are required to make to third parties in certain circumstances until a minimum royalty percentage has been reached. In the event that we sublicense the patent rights, MDC is also entitled to receive a percentage of the sublicensing income received by us.

Under the license with MDC, we are obligated to use commercially reasonable efforts to develop and obtain approval of a licensed product.

The agreement will expire concurrently with patent rights on a country-by-country basis. We may terminate the agreement by providing prior written notice to MDC, and MDC has the right to terminate the agreement if we materially breach the agreement and fail to cure such breach within a specified grace period.

***Whitehead Institute for Biomedical Research***

In February 2009, we entered into a license agreement with the Whitehead Institute for Biomedical Research, as amended in October 2009 and September 2010, for rights relating to compositions and methods for reprogramming somatic cells to a less differentiated or pluripotent state. Under our agreement with the Whitehead Institute, we acquired an exclusive royalty-bearing, sublicensable, worldwide license to make, use and sell licensed products in all fields for commercial purposes, excluding the sale or distribution of reagents for basic research use. The licensed patent rights are described in more detail above under "Intellectual Property Relating to iPSC Technology." The Whitehead Institute retains the right to practice the patent rights for research, teaching and educational purposes, including in corporate-sponsored research under limited circumstances and in some cases only after obtaining our consent. The Whitehead Institute also retains the right to license other academic and non-profit research institutes to practice the patent rights for research, teaching and educational purposes, but not for corporate-sponsored research. Our license is also subject to pre-existing rights of the U.S. government.

Under the terms of the license agreement, we are required to pay the Whitehead Institute an annual license maintenance fee during the term of the agreement, and are also required to make payments of up to $2.3 million for development and regulatory milestones achieved with respect to licensed products. If commercial sales of a licensed product commence, we will also be required to pay royalties at percentage rates in the low-single digits on net sales of licensed products. Our royalty payments are subject to reduction for any third-party payments required to be made until a minimum royalty percentage has been reached. In the event that we sublicense the patent rights, the Whitehead Institute is also entitled to receive a percentage of the sublicensing income received by us.

Under the license agreement with the Whitehead Institute, we are obligated to use commercially reasonable efforts to develop and commercialize licensed products, and to make licensed products or processes reasonably available to the public. In particular, we are required to commit a minimum amount of funding toward the development of a licensed product on an annual basis or conduct activities toward specific development milestones.

The agreement will continue until the abandonment of all patent rights or expiration of the last to expire licensed patent. The Whitehead Institute may terminate the agreement if we default in the performance of any of our obligations and fail to cure the default within a specified grace period, or if we institute a proceeding to challenge the patent rights. The Whitehead Institute may also terminate the agreement if we cease to carry out our business or become bankrupt or insolvent. We may terminate the agreement for any reason upon prior written notice to the Whitehead Institute and payment of all amounts due to the Whitehead Institute through the date of termination.

***The Scripps Research Institute***

We have entered into various license agreements with The Scripps Research Institute (TSRI) for rights relating to compositions and methods for reprogramming somatic cells, including the use of various small molecule classes and compounds in the reprogramming and maintenance of iPSCs. Under our agreements with TSRI (the TSRI License Agreements), we acquired exclusive royalty-bearing, sublicensable, worldwide licenses to make, use and sell products covered by the licensed patent rights, and to perform licensed processes, in each case, in all fields. The licensed patent rights are described in more detail above under "Intellectual Property Relating to iPSC Technology." TSRI retains a non-exclusive right to practice and use the patent rights for non-commercial educational and research purposes, and to license other academic and non-profit research institutions to practice the patent rights for internal basic research and education purposes. Under certain of our TSRI License Agreements, other third parties maintain a right to practice the patent rights for their internal use only. Our license is also subject to pre-existing rights of the U.S. government.

Under the terms of the TSRI License Agreements, we are required to pay to TSRI annual minimum fees during the term of each agreement. Additionally, upon the achievement of specific regulatory and commercial milestones, we are required to make payments to TSRI of up to approximately $1.8 million under each of the TSRI License Agreements. We will also be required to pay TSRI royalties at percentage rates ranging in the low- to mid-single digits on net sales of licensed products. In the event that we sublicense the patent rights, TSRI is also entitled to receive a percentage of the sublicensing income received by us.

Under the TSRI License Agreements, we are obligated to use commercially reasonable efforts to meet the development benchmarks set out in development plans under each of the TSRI License Agreements, or otherwise expend a minimum specified amount per year for product development. TSRI has the right to terminate any TSRI License Agreement if we fail to perform our obligations under the applicable agreement, including failure to meet any development benchmark or to use commercially reasonable efforts and due diligence to develop a licensed product, or if we otherwise breach the agreement, challenge the licensed patent rights, are convicted of a felony involving the development or commercialization of a licensed product or process, or become insolvent. We may terminate any of our TSRI License Agreements by providing ninety days' written notice to TSRI. Each TSRI License Agreement otherwise terminates upon the termination of royalty obligations under such agreement.

***Children's Medical Center Corporation***

In May 2009, we entered into a license agreement with Children's Medical Center Corporation (CMCC) for rights relating to therapeutic compositions of modulated HSCs and methods for promoting reconstitution of the hematopoietic system using modulators of the prostaglandin pathway, as described in more detail above under "Intellectual Property Relating to the Programming of Hematopoietic Cells." Under our agreement with CMCC, we acquired an exclusive royalty-bearing, sublicensable, worldwide license to make, use and sell products covered by the licensed patent rights, and to perform licensed processes, in each case, in all fields. CMCC retains a non-exclusive right to practice and use the patent rights for research, educational, clinical or charitable purposes, and also to license other academic and nonprofit organizations to practice the patent rights for research, educational, and charitable purposes (but excluding any clinical use and commercialization of the patent rights to the extent granted to us under the license agreement). Our license is also subject to pre-existing rights of the U.S. government and rights retained by the Howard Hughes Medical Institute and the General Hospital Corporation to use the patent rights for research purposes. Additionally, if we make any discovery or invention that is described in a patent application and is not within the scope of the licensed patent rights but would not have been made but for the licensed patent rights, we are required to disclose the invention to CMCC and enter into a non-exclusive license agreement with CMCC, for no more than a nominal fee, for CMCC to practice the invention solely for internal research purposes or clinical purposes and not for commercial purposes.

Under the terms of the license agreement, we are required to pay to CMCC an annual license maintenance fee during the term of the agreement. We also are required to make payments to CMCC of up to $5.0 million per product in development, regulatory and sales milestones. If commercial sales of a licensed product commence, we will pay CMCC royalties at percentage rates ranging in the low- to mid-single digits on net sales of licensed products in countries where such product is protected by patent rights. Our obligation to pay royalties continues on a country by country basis until the expiration of all licensed patent rights covering licensed products in such country, and our royalty payments will be reduced by other payments we are required to make to third parties until a minimum royalty percentage has been reached. In the event that we sublicense the patent rights, CMCC is also entitled to receive a percentage of the sublicensing income received by us.

Under the license with CMCC, we are obligated to use commercially reasonable efforts to bring a licensed product to market as soon as practicable, and also to use good faith and diligent efforts to manufacture and distribute a licensed product, and make licensed products reasonably available to the public during the term of the agreement. We are also required to use good faith and diligent efforts to meet the milestones set forth in development plans as part of the agreement, subject to any revisions to the development plans that may be permitted under certain circumstances. Additionally, if a third party expresses interest in an area under the license that we are not pursuing, under the terms of our agreement with CMCC, we may be required to sublicense rights in that area to the third party.

The agreement will continue until the last to expire of the patent rights. We may terminate the agreement by providing prior written notice to CMCC, and CMCC has the right to terminate the agreement if we fail to pay royalties or otherwise materially breach the agreement and fail to cure such breach within a specified grace period. CMCC may also terminate the agreement should we cease operations or in the event of our bankruptcy or insolvency.

**Manufacturing**

***Off-the-shelf, iPSC-derived Cellular Immunotherapies***

The manufacture of our off-the-shelf, iPSC-derived cellular immunotherapy product candidates involves a three-stage process:

- The first stage is intended to generate a clonal master iPSC line and generally consists of the following steps: (i) obtain appropriately-consented healthy human donor cells, such as fibroblasts or hematopoietic cells, and conduct transfusion transmissible disease testing on the donor cells; (ii) induction of pluripotency in the donor cells using a proprietary transgene integration-free and footprint-free method of reprogramming; (iii) genetic engineering, where applicable, of iPSCs; and (iv) isolation and selection of a single iPSC, followed by clonal expansion of the single iPSC to produce a clonal master iPSC line for cell product manufacture.
- The second stage is intended to derive the cell product population of interest and generally consists of the following steps: (i) expansion and differentiation of the clonal master iPSC line to produce $CD34^+$ definitive hematopoietic progenitor cells; and (ii) further expansion and differentiation of these progenitor cells to produce the cell product population of interest.
- The third stage is intended to derive the final cell product and generally consists of the following steps: (i) washing the cell product population; (ii) formulating the cell product population in an infusion media for intravenous administration of the final cell product; and (iii) cryopreserving individual aliquots of the final cell product and storing these aliquots in single-dose infusion bags.

As part of our manufacturing process, we endeavor to utilize current Good Manufacturing Process (cGMP) grade materials and reagents, if commercially available; however, certain critical materials and reagents are currently qualified for research use only. Additionally, we obtain key components required for the manufacture of our iPSC-derived cell product candidates from third-party manufacturers and suppliers, which include, in some instances, sole source manufacturers and suppliers. We do not currently have long-term commitments or supply agreements in place to obtain certain key components used in the manufacture of our iPSC-derived cell product candidates.

We are manufacturing our iPSC-derived cell product candidates for use in research, preclinical development, and clinical development. In September 2019, we opened our cGMP compliant manufacturing facility for the clinical production of our iPSC-derived cell product candidates. Our cGMP facility, located in San Diego, California, is custom designed for the manufacture of off-the-shelf cell product candidates using clonal master iPSC lines as the starting cell source. The new state-of-the-art facility has been commissioned and qualified, and we have been issued a drug manufacturing license by the State of California, Department of Health Services, Food and Drug Branch. In January 2020, we entered into a new lease agreement for a future headquarters facility, which is designed to include cGMP manufacturing. The lease is expected to commence, subject to certain conditions, in May 2021, and once complete, we intend to manufacture our iPSC-derived cell product candidates at this facility.

We also contract with third parties, including medical center cell therapy facilities and contract manufacturing organizations (CMOs), for the conduct of some or all of the activities required for manufacturing our iPSC-derived cell product candidates for use in clinical investigation. We expect that we will continue to contract with third parties, including medical center cell therapy facilities and CMOs, for the conduct of some or all of the activities required for manufacturing our iPSC-derived cell product candidates.

***ProTmune™***

ProTmune is a composition of *ex vivo* programmed human mobilized peripheral blood cells. ProTmune is produced by treating qualified human mobilized peripheral blood with two small molecules, FT1050 and FT4145, in a multi-step process that is performed on the day of HSCT. Currently, the manufacture of ProTmune is performed at clinical cell processing facilities operated by or affiliated with our clinical sites. The manufacturing process consists of functionally closed unit operations. We aim to continue to develop manufacturing processes to further standardize the manufacture of ProTmune across clinical cell processing facilities.

Human peripheral blood cells sourced from a healthy donor, whose tissue type closely matches the patient's, are used as the starting cellular source material for the manufacture of ProTmune. HSCT centers can electronically access a worldwide network of donor registries, which collect and transfer human peripheral blood cells sourced from healthy donors, to source these cells on behalf of patients. We expect donor registries to continue to collect and transfer, and HSCT centers to continue to source, human peripheral blood cells for our manufacture of ProTmune. Other components used in the manufacture of ProTmune include programming media as well as disposable materials, such as bags and tubing sets. To date, we have obtained all components required for the manufacture of ProTmune, including FT1050, FT4145 and programming media, from third-party manufacturers and suppliers, which include, in some instances, sole source manufacturers and suppliers. We do not currently have long-term commitments or supply agreements in place to obtain human peripheral blood cells and certain components used in the manufacture of ProTmune.

For the conduct of our Phase 1/2 clinical trial of ProTmune, the clinical cell processing facility at each participating site is qualified and trained by our technical staff to manufacture ProTmune. Our technical representative(s) are on-site at the clinical cell processing facility for each of the first two subjects administered ProTmune at a participating site. ProTmune is released immediately by the clinical cell processing facility staff after final processing, including filtration, final packaging, rapid release testing, and labeling. In the future, we may manufacture ProTmune at facilities operated by us, by transplant centers, or by third parties.

**Marketing & Sales**

We currently intend to commercialize any products that we may successfully develop. We currently have no experience in marketing or selling therapeutic products. To market any of our products independently would require us to develop a sales force with technical expertise along with establishing commercial infrastructure and capabilities. Our commercial strategy for marketing our product candidates also may include the use of strategic partners, distributors, a contract sales force or the establishment of our own commercial infrastructure. We plan to further evaluate these alternatives as we approach approval for the first of our product candidates.

**Government Regulation**

In the United States, the FDA regulates biological products under the Federal Food, Drug, and Cosmetic Act (the FDCA) and the Public Health Service Act (the PHS Act) and related regulations, and drugs under the FDCA and related regulations. Biological products and drugs are also subject to other federal, state, local, and foreign statutes and regulations. The FDA and comparable regulatory agencies in state and local jurisdictions and in foreign countries impose substantial requirements upon the clinical development, manufacture and marketing of biological products and drugs. These agencies and other federal, state, local, and foreign entities regulate research and development activities and the testing, manufacture, quality control, safety, effectiveness, packaging, labeling, storage, distribution, record keeping, reporting, approval or licensing, advertising and promotion, and import and export of our products. Failure to comply with the applicable U.S. regulatory requirements at any time during the product development process or after approval may subject an applicant to administrative or judicial sanctions. FDA sanctions include refusal to approve pending applications, withdrawal of an approval or suspension or revocation of a license, clinical hold, warning or untitled letters, voluntary or mandatory product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, mandated corrective advertising or communications with doctors, debarment, restitution, disgorgement of profits, or civil or criminal penalties. In addition, government regulation may delay or prevent marketing of product candidates for a considerable period of time and impose costly procedures upon our activities.

***Marketing Approval***

The process required by the FDA before biological products and drugs may be marketed in the United States generally involves the following:

- completion of nonclinical laboratory and animal tests 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 application which must become effective before human clinical trials may begin;
- 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 subjects and their health information, to establish the safety and efficacy of the proposed biological product or drug for its intended use or uses;
- for a biological product, submission to the FDA of a Biologics License Application (BLA) for marketing approval that includes substantive evidence of safety, purity, and potency from results of nonclinical testing and clinical trials, and, for a drug, submission of a New Drug Application (NDA) that includes substantive evidence of the product's safety and efficacy;
- satisfactory completion of an FDA pre-approval inspection of manufacturing facilities where the product is produced to assess compliance with the FDA's cGMPs to assure that the facilities, methods and controls are adequate, and, if applicable, current good tissue practices (cGTPs) for the use of human cellular and tissue products to prevent the introduction, transmission or spread of communicable diseases;
- potential FDA audit of the nonclinical study sites and clinical trial sites that generated the data in support of the BLA or NDA; and
- FDA review and approval, or licensure, of the BLA and review and approval of the NDA which must occur before a biological product and a drug can be marketed or sold.

***U.S. Biological Products and Drug Development Process***

Before testing any biological product or drug candidate in humans, nonclinical tests, including laboratory evaluations and animal studies to assess the potential safety and activity of the product candidate, are conducted. The conduct of the nonclinical tests must comply with federal regulations and requirements including GLPs.

Prior to commencing the first clinical trial, the trial sponsor must submit the results of the nonclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of an initial IND application. Some nonclinical testing may continue even after the IND application is submitted. The IND application automatically becomes effective 30 days after receipt by the FDA unless the FDA, within the 30-day time period, raises concerns or questions about the conduct of the clinical trial and places the trial on a clinical hold. In such case, the sponsor of the IND application must resolve any outstanding concerns with the FDA before the clinical trial may begin. The FDA also may impose a clinical hold on ongoing clinical trials due to safety concerns or non-compliance. If a clinical hold is imposed, a trial may not recommence without FDA authorization and then only under terms authorized by the FDA. A clinical hold may either be a full clinical hold or a partial

clinical hold that would limit a trial, for example, to certain doses or for a certain length of time or to a certain number of subjects. Further, an independent institutional review board (IRB) for each site proposing to conduct the clinical trial must review and approve the plan for any clinical trial before it commences at that site. An IRB is charged with protecting the welfare and rights of study subjects 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 that must be signed by each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed.

Clinical trials involve the administration of the product candidate to healthy volunteers or 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 rules that assure a clinical trial will be stopped if certain adverse events occur. Each protocol and any amendments to the protocol must be submitted to the FDA and to the IRB. Information about certain clinical studies must be submitted with specific timeframes to the National Institutes of Health for public dissemination at www.clinicaltrials.gov.

For purposes of BLA or NDA approval, human clinical trials are typically conducted in three sequential phases that may overlap:

- Phase 1—The investigational 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. These trials may also provide early evidence on effectiveness.
- Phase 2—These trials are conducted in a limited number of patients in the target 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 and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3—Phase 3 trials are undertaken to provide statistically significant evidence of clinical efficacy and to further evaluate dosage, potency, and safety in an expanded patient population at multiple clinical trial sites. They are performed after preliminary evidence suggesting effectiveness of the product has been obtained, and are intended to establish the overall benefit-risk relationship of the investigational product, and to provide an adequate basis for product approval and physician labeling.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These trials may be required by the FDA as a condition of approval and are used to gain additional experience from the treatment of patients in the intended indication, particularly for long-term safety follow-up. The FDA has statutory authority to require post-market clinical trials to address safety issues. All of these trials must be conducted in accordance with GCP requirements in order for the data to be considered reliable for regulatory purposes.

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. Within 15 calendar days after the sponsor determines that the information qualifies for reporting, written IND safety reports must be submitted to the FDA and the investigators for serious and unexpected adverse events; any findings from other studies, tests in laboratory animals or *in vitro* testing that suggest a significant risk for human subjects; or any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. 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.

Regulatory authorities, a data safety monitoring board or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the participants are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the trial is not being conducted in accordance with the IRB's requirements or if the investigated product has been associated with unexpected serious harm to patients, and the trial may not recommence without the IRB's authorization.

Typically, if a product is intended to treat a chronic disease, safety and efficacy data must be gathered over an extended period of time, which can range from six months to three years or more.

Concurrently with clinical trials, companies usually complete additional animal studies and must also develop additional information about the physical characteristics of the investigational product and 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 the use of biological products, the PHS Act emphasizes 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.

A drug being studied in clinical trials may be made available to individual patients in certain circumstances. Pursuant to the 21st Century Cures Act (the Cures Act), as amended, the manufacturer of an investigational drug for a serious disease or condition is required to make available, such as by posting on its website, its policy on evaluating and responding to requests for individual patient access to such investigational drug. This requirement applies on the earlier of the first initiation of a Phase 2 or Phase 3 trial of the investigational drug, or as applicable, 15 days after the drug receives a designation as a breakthrough therapy, fast track product, or regenerative advanced therapy. Further, the Trickett Wendler, Frank Mongiello, Jordan McLinn, and Matthew Bellina Right to Try Act of 2017 (the Right to Try Act) among other things, provides a federal framework for certain patients to request access to certain investigational new drug products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. There is no obligation for a pharmaceutical manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act. We review each individual request for access through the Cures Act, the Right to Try Act and similar state laws, and may or may not provide access depending upon the facts of each request.

***U.S. Review and Approval Processes***

In order to obtain approval to market a biological product in the United States, a BLA must be submitted to the FDA that provides data establishing to the FDA's satisfaction the safety, purity and potency of the investigational product for the proposed indication. Similarly, for a drug, an NDA must be submitted to the FDA that provides data demonstrating the drug is safe and effective. Both a BLA and an NDA include all data available from nonclinical studies and clinical trials, together with detailed information relating to the product's manufacture and composition, and proposed labeling.

Under the Prescription Drug User Fee Act (PDUFA), as amended, each BLA and NDA must be accompanied by a user fee. The FDA adjusts the PDUFA user fees on an annual basis. According to the FDA's fee schedule, effective through September 30, 2021, the user fee for an application requiring clinical data, such as a BLA and an NDA, is $2,875,842. PDUFA also imposes an annual prescription drug product program fee for biologics and drugs ($336,432). 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 having fewer than 500 employees. Additionally, no user fees are assessed on BLAs or NDAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

The FDA has 60 days from its receipt of a BLA or NDA to determine whether the application will be accepted for filing based on the agency's threshold determination that the application is sufficiently complete to permit substantive review. The FDA may refuse to file any BLA or NDA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the BLA or NDA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. After the BLA or NDA submission is accepted for filing, the FDA reviews the BLA or NDA to determine, among other things, whether the proposed product is safe and effective for its intended use, and has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMPs to assure and preserve the product's identity, safety, strength, quality, potency, and purity, and for a biological product, whether it meets the biological product standards. The FDA may refer applications for novel products or products that present difficult questions of safety or efficacy to an advisory committee, typically comprised of clinicians and other experts, for evaluation and a recommendation as to whether the application should be approved and, if so, under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

Before approving a BLA or NDA, 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 a human cellular or tissue product, the FDA also will not approve the product if the manufacturer is not in compliance with cGTPs. FDA regulations also require tissue establishments to register and list their human cells, tissues, and cellular and tissue based products (HCT/Ps) with the FDA and, when applicable, to evaluate donors through screening and testing. Additionally, before approving a BLA or NDA, the FDA may inspect clinical sites to assure that the clinical trials were conducted in compliance with IND study requirements and GCPs. If the FDA determines the manufacturing process or manufacturing facilities are not acceptable, it typically will outline the deficiencies and often will require the facility to take corrective action and provide documentation evidencing the implementation of such corrective action, which may delay further review of the application. If the FDA finds that a clinical site did not conduct the clinical trial in accordance with GCPs, the FDA may determine the data generated by the site should be excluded from the primary efficacy analyses provided in the BLA or NDA, and request additional testing or data. Additionally, the FDA ultimately may still decide that the application does not satisfy the regulatory criteria for approval.

The FDA also has authority to require a Risk Evaluation and Mitigation Strategy (REMS) from manufacturers to ensure that the benefits of a biological product or drug outweigh its risks. A sponsor may also voluntarily propose a REMS as part of the BLA or NDA submission. The need for a REMS is determined as part of the review of the BLA or NDA. Based on statutory standards, elements of a REMS may include "dear doctor letters," a medication guide, more elaborate targeted educational programs, and in some cases restrictions on distribution. These elements are negotiated as part of the BLA or NDA approval, and in some cases may delay the approval date. Once adopted, REMS are subject to periodic assessment and modification.

After the FDA completes its initial review of a BLA or NDA, it will communicate to the sponsor that the biological product will either be approved, or it will issue a complete response letter to communicate that the BLA or NDA will not be approved in its current form. The complete response letter usually describes all of the specific deficiencies in the BLA or NDA 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 applicant in a condition for approval. If a complete response letter is issued, the applicant may either resubmit the BLA or NDA to address all of the deficiencies identified in the letter, or withdraw the application, or request a hearing.

One of the performance goals of the FDA under PDUFA is to review 90% of standard BLAs and NDAs in 10 months and 90% of priority BLAs and NDAs in six months, whereupon a review decision is to be made. The FDA does not always meet its PDUFA goal dates for standard and priority BLAs and NDAs and its review goals are subject to change from time to time. The review process and the PDUFA goal data may be extended by three months if the FDA requests or the BLA or NDA applicant otherwise provides additional information or clarification regarding information already provided in the submission within the last three months before the PDUFA goal date.

Even if a product candidate receives regulatory approval, the approval may be limited to specific disease states, patient populations and dosages, or the indications for use may otherwise be limited. 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 Phase 4 post-marketing clinical trials and testing and surveillance programs to monitor the safety of approved products that have been commercialized. Further, even after regulatory approval is obtained, later discovery of previously unknown problems with a product may result in the imposition of new restrictions on the product or complete withdrawal of the product from the market.

***Expedited Development and Review Programs***

The FDA has a Fast Track program intended to facilitate the development and expedite the review of new drugs and biological products that are intended to treat a serious or life-threatening condition or disease and demonstrate the potential to address unmet medical needs for the condition. Fast Track designation applies to the combination of the product and the specific indication for which it is being studied. The sponsor of a biological product or drug may request the FDA to designate the biologic or drug as a Fast Track product at any time during clinical development. Unique to a Fast Track product, the FDA may consider for review sections of the marketing application on a rolling basis before the complete application is submitted if the sponsor provides a schedule for the submission of the sections of the application, the FDA agrees to accept sections of the application and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the application.

Any product submitted to the FDA for marketing, including under a Fast Track program, may be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. Any 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 biological product or drug designated for priority review in an effort to facilitate the review. Additionally, a product may be eligible for accelerated approval. Drug or biological products studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may receive accelerated approval, which means that they may be approved on the basis of adequate and well-controlled clinical trials establishing that the product has an effect on a surrogate endpoint that is reasonably likely to predict a clinical benefit, or on the basis of an effect 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 biological product or drug receiving accelerated approval perform adequate and well-controlled post-marketing clinical trials. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials.

The FDCA also requires FDA to expedite the development and review of a breakthrough therapy. A biological product or drug can be designated as a breakthrough therapy if it is intended to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that it may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints. A sponsor may request that a biological product or drug be designated as a breakthrough therapy at any time during the clinical development of the product. If so designated, FDA shall act to expedite the development and review of the product's marketing application, including by meeting with, and providing advice to, the sponsor throughout the product's development, and taking steps to facilitate an efficient review of the development program and to ensure that the design of the clinical trials is as efficient as practicable.

Fast Track designation, priority review, accelerated approval, and breakthrough therapy designation do not change the standards for approval but may expedite the development or approval process.

***Accelerated Approval for Regenerative Advanced Therapies***

As part of the Cures Act, Congress amended the FDCA to create an accelerated approval program for regenerative advanced therapies, which include cell therapies, therapeutic tissue engineering products, human cell and tissue products, and combination products using any such therapies or products. Regenerative advanced therapies do not include those human cells, tissues, and cellular and tissue-based products regulated solely under section 361 of the PHS Act and 21 CFR Part 1271. This program is intended to facilitate efficient development and expedite review of regenerative advanced therapies, which are intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition. A drug sponsor may request that FDA designate a drug as a regenerative advanced therapy concurrently with or at any time after submission of an IND. FDA has 60 calendar days to determine whether the drug meets the criteria, including whether there is preliminary clinical evidence indicating that the drug has the potential to address unmet medical needs for a serious or life-threatening disease or condition. A BLA or NDA for a regenerative advanced therapy may be eligible for priority review or accelerated approval through (1) surrogate or intermediate endpoints reasonably likely to predict long-term clinical benefit or (2) reliance upon data obtained from a meaningful number of sites. Benefits of such designation also include early interactions with FDA to discuss any potential surrogate or intermediate endpoint to be used to support accelerated approval. A regenerative advanced therapy that is granted accelerated approval and is subject to post approval requirements may fulfill such requirements through the submission of clinical evidence, clinical studies, patient registries, or other sources of real world evidence, such as electronic health records; the collection of larger confirmatory data sets; or post approval monitoring of all patients treated with such therapy prior to its approval.

***U.S. Patent Term Restoration and Marketing Exclusivity***

Under certain circumstances, U.S. patents 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 Amendments. Patent term restoration can compensate for time lost during product development and the regulatory review process by returning up to five years of patent life for a patent that covers a new product or its use. 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 period of patent term restoration is generally one-half the time between the effective date of an IND application (falling after issuance of the patent) and the submission date of a BLA or NDA, plus the time between the submission date of the BLA or NDA and the approval of that application, provided the sponsor acted with diligence. 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 application for patent term extension is subject to approval by the U.S. Patent and Trademark Office in consultation with the FDA. A patent term extension is only available when the FDA approves a biological product or drug for the first time.

With the Hatch-Waxman Amendments, Congress authorized the FDA to approve generic drugs that are the same as drugs previously approved by the FDA under the NDA provisions of the FDCA. To obtain approval of a generic drug, an applicant must submit to the agency an abbreviated new drug application (ANDA) which relies on the preclinical and clinical testing previously conducted for a drug approved under an NDA, known as the reference listed drug (RLD). For the ANDA to be approved, the FDA must find that the generic version is identical to the RLD with respect to the active ingredients, the route of administration, the dosage form, and the strength of the drug. The FDA must also determine that the generic drug is bioequivalent to the innovator drug.

An abbreviated approval pathway for biological products shown to be biosimilar to, or interchangeable with, a FDA-licensed reference biological product was created by the Biologics Price Competition and Innovation Act of 2009, which was part of the Patient Protection and Affordable Care Act of 2010 (ACA). This amendment to the PHS Act attempts to minimize duplicative testing. Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, can be shown through analytical studies, animal studies, and a clinical trial or trials. Interchangeability requires that a biological product is biosimilar to the reference biological product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product and, for products administered multiple times, the product and the reference product may be 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 reference biological product is granted twelve years of exclusivity from the time of first licensure of the reference product. The first biological product submitted under the abbreviated approval pathway that is determined to be interchangeable with the reference product has exclusivity against other biologics submitting under the abbreviated approval pathway for the lesser of (i) one year after the first commercial marketing, (ii) 18 months after approval if there is no legal challenge, (iii) 18 months after the resolution in the applicant's favor of a lawsuit challenging the biologic's patents if an application has been submitted, or (iv) 42 months after the application has been approved if a lawsuit is ongoing within the 42-month period.

A biological product or drug can obtain pediatric market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing exclusivity periods and patent terms. This six-month exclusivity, which runs from the end of other exclusivity protection or patent term, may be granted based on the voluntary completion of a pediatric study in accordance with an FDA-issued "Written Request" for such a study.

***Orphan Designation***

Under the Orphan Drug Act, the FDA may grant orphan designation to biological products and drugs 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 United States and for which there is no reasonable expectation that the cost of developing and making a biological product or drug in the United States for this type of disease or condition will be recovered from sales of the product. Orphan designation must be requested before submitting a BLA or NDA. After the FDA grants orphan designation, the identity of the applicant, the name of the therapeutic agent and its designated orphan use are disclosed publicly by the FDA. Orphan designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

If a biological product or drug that receives orphan designation is the first such product approved by FDA for the orphan indication, it receives orphan product exclusivity, which for seven years prohibits the FDA from approving another application to market the same product for the same indication. Orphan product exclusivity will not bar approval of another product under certain circumstances, including if the new product is shown to be clinically superior to the approved product on the basis of greater efficacy or safety or a demonstration that the new product otherwise makes a major contribution to patient care. More than one product may also be approved by the FDA for the same orphan indication or disease as long as the products are different. If a biological product or drug designated as an orphan product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan product exclusivity. Orphan drug status in the European Union has similar, but not identical, benefits.

***Pediatric Research Equity Act***

Under the Pediatric Research Equity Act (PREA), as amended, a BLA or NDA or supplement must contain data to assess the safety and effectiveness of the biological product or drug 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. The intent of PREA is to compel sponsors whose products have pediatric applicability to study those products in pediatric populations. The FDCA requires manufacturers of biological products and drugs that include a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration to submit a pediatric study plan to the FDA as part of the IND application. The plan must be submitted not later than 60 days after the end-of-Phase 2 meeting with the FDA; or if there is no such meeting, before the initiation of any Phase 3 trials or a combined Phase 2 and Phase 3 trial; or if no such trial will be conducted, no later than 210 days before submitting a marketing application or supplement. The FDA may grant deferrals for submission of data or full or partial waivers. Generally, PREA does not apply to any biological product or drug for an indication for which orphan designation has been granted.

***Healthcare Reform and Other Regulatory Changes***

In the United States and some foreign jurisdictions, there have been, and likely will continue to be, a number of legislative and regulatory changes and proposed changes regarding the healthcare system directed at broadening the availability of healthcare, improving the quality of healthcare, and containing or lowering the cost of healthcare.

For example, in March 2010, the ACA was enacted in the United States. The ACA includes measures that have significantly changed, and are expected to continue to significantly change, the way healthcare is financed by both governmental and private insurers. Among the provisions of the ACA of greatest importance to the pharmaceutical industry are that the ACA:

- subjects biological products to potential competition by biosimilars;
- made several changes to the Medicaid Drug Rebate Program, including increasing pharmaceutical manufacturers' rebate liability by raising the minimum basic Medicaid rebate on most branded prescription drugs to 23.1% of average manufacturer price (AMP), and adding a new rebate calculation for "line extensions" (i.e., new formulations, such as extended release formulations) of solid oral dosage forms of branded products, as well as potentially impacting their rebate liability by modifying the statutory definition of AMP;

- imposed a requirement on manufacturers of branded drugs to provide a 70% point-of-sale discount off the negotiated price of branded drugs dispensed to Medicare Part D beneficiaries in the coverage gap (i.e., "donut hole") as a condition for a manufacturer's outpatient drugs being covered under Medicare Part D;
- extended a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expanded the entities eligible for discounts under the 340B Drug Discount Program;
- established a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted, or injected;
- imposed an annual, nondeductible fee and tax on any entity that manufactures or imports certain branded prescription drugs, apportioned among these entities according to their market share in certain government healthcare programs;
- imposed new reporting requirements on drug manufacturers for payments made to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members. Failure to submit required information may result in significant civil monetary penalties for all payments, transfers of value or ownership or investment interests that are not timely, accurately and completely reported in an annual submission; and
- established a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research. The research conducted by the Patient-Centered Outcomes Research Institute may affect the market for certain pharmaceutical products. The ACA established the Center for Medicare and Medicaid Innovation (CMMI) within the Centers for Medicare and Medicaid Services (CMS) to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been numerous judicial, administrative, executive, and legislative challenges to certain aspects of the ACA, and we expect there will be additional challenges and amendments to the ACA in the future. Various portions of the ACA are currently undergoing legal and constitutional challenges in the United States Supreme Court; the former administration issued various Executive Orders which eliminated cost sharing subsidies and various provisions that would impose a fiscal burden on states or a cost, fee, tax, penalty or regulatory burden on individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices; and Congress has introduced several pieces of legislation aimed at significantly revising or repealing the ACA. The United States Supreme Court is expected to rule on a legal challenge to the constitutionality of the ACA in early 2021. The implementation of the ACA is ongoing, and the law appears likely to continue the downward pressure on pharmaceutical pricing, especially under the Medicare program, and may also increase our regulatory burdens and operating costs. Litigation and legislation related to the ACA are likely to continue, with unpredictable and uncertain results.

Congress may consider additional legislation to repeal, replace, or further modify elements of the ACA. In addition, the Biden administration may take steps to repeal, replace, or further modify elements of the ACA and regulatory actions taken by the previous administration. Thus, the full impact of the ACA, or any law repealing, replacing or modifying elements of it, and the political uncertainty regarding any repeal, replacement or modification of the ACA, on our business remains unclear. We expect that additional federal healthcare reform measures may be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare drugs, biologics and services.

There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. Congressional inquiries and proposed federal and state legislation designed to, among other things, bring more transparency to product pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for products. At the federal level, the previous administration's budget proposal for fiscal year 2021 includes a $135 billion allowance to support legislative proposals seeking to reduce drug prices, increase competition, lower out-of-pocket drug costs for patients, and increase patient access to lower-cost generic and biosimilar drugs. On March 10, 2020, the previous administration sent "principles" for drug pricing to Congress, calling for legislation that would, among other things, cap Medicare Part D beneficiary out-of-pocket pharmacy expenses, provide an option to cap Medicare Part D beneficiary monthly out-of-pocket expenses, and place limits on pharmaceutical price increases. Additionally, the Trump administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The U.S. Department of Health and Human Services, or HHS, has already implemented certain measures. For example, in May 2019, CMS issued a final rule to allow Medicare Advantage Plans the option of using step therapy for Part B drugs beginning January 1, 2020. Although a number of these, and other proposed measures may require authorization through additional legislation to become effective, Congress has indicated that it will continue to seek new legislative measures to control drug costs. Additionally, it is unclear whether the Biden administration will challenge, reverse, revoke or

otherwise modify previous administrative and executive actions. 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, designed to encourage importation from other countries and bulk purchasing.

***Other Healthcare Laws and Compliance Requirements***

In the United States, our activities are potentially subject to regulation by various federal, state and local authorities in addition to the FDA, CMS, other divisions of HHS, (e.g., the Office of Inspector General, or OIG), the United States Department of Justice and individual United States Attorney offices within the Department of Justice, and state and local governments. For example, our clinical research, sales, marketing and scientific/educational grant programs may have to comply with the anti-fraud and abuse provisions of the Social Security Act, the false claims laws, the privacy and security provisions of the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) and similar state laws, each as amended, as applicable, including:

- the federal Anti-Kickback Statute, which prohibits, among other things, knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe, or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, either the referral of an individual, or the purchase, lease, order, arrangement or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs; a person or entity does not need to have actual knowledge of the federal Anti-Kickback Statute or specific intent to violate it to have committed a violation. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act or federal civil money penalties statute;
- the federal civil and criminal false claims laws and civil monetary penalty laws, including the False Claims Act, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, false or fraudulent claims for payment to, or approval by Medicare, Medicaid, or other federal healthcare programs, knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim or an obligation to pay or transmit money to the federal government, or knowingly concealing or knowingly and improperly avoiding or decreasing or concealing an obligation to pay money to the federal government. Manufacturers can be held liable under the False Claims Act even when they do not submit claims directly to government payors if they are deemed to “cause” the submission of false or fraudulent claims. The False Claims Act also permits a private individual acting as a “whistleblower” to bring actions on behalf of the federal government alleging violations of the False Claims Act and to share in any monetary recovery;
- the anti-inducement law, which prohibits, among other things, the offering or giving of remuneration, which includes, without limitation, any transfer of items or services for free or for less than fair market value (with limited exceptions), to a Medicare or Medicaid beneficiary that the person knows or should know is likely to influence the beneficiary’s selection of a particular supplier of items or services reimbursable by a federal or state governmental program;
- HIPAA, which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false, fictitious, or fraudulent statements or representations in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters; similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and their respective implementing regulations, which impose requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use, or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information;
- the federal transparency requirements under the ACA, including the provision commonly referred to as the Physician Payments Sunshine Act, and its implementing regulations, which requires applicable manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program to report annually to the U.S. Department of Health and Human Services, CMS, information related to payments or other transfers of value made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by the physicians described

above and their immediate family members. Effective January 1, 2022, these reporting obligations will extend to include transfers of value made to certain non-physician providers such as physician assistants and nurse practitioners;

- federal government price reporting laws, which require us to calculate and report complex pricing metrics in an accurate and timely manner to government programs; and
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers.

In addition to the above, on November 20, 2020, OIG finalized further modifications to the federal Anti-Kickback Statute. Under the final rules, OIG added safe harbor protections under the Anti-Kickback Statute for certain coordinated care and value-based arrangements among clinicians, providers, and others. Simultaneously, HHS removed safe harbor protection for price reductions from pharmaceutical manufacturers to plan sponsors under Part D, either directly or through pharmacy benefit managers, unless the price reduction is required by law. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers. HHS has delayed the implementation of the removal of safe harbor protection for price reductions from pharmaceutical manufacturers and creation of a new safe harbor for certain fixed fees rule to March 22, 2021. We continue to evaluate what effect, if any, these rules will have on our business.

Additionally, we may be subject now or in the future to state and foreign equivalents of each of the healthcare laws and regulations described above, among others, some of which may be broader in scope and may apply regardless of the payor. Many U.S. states have adopted laws similar to the federal Anti-Kickback Statute and False Claims Act, and may apply to our business practices, including, but not limited to, research, distribution, sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental payors, including private insurers. In addition, some states have passed laws that require pharmaceutical companies to comply with the April 2003 OIG Compliance Program Guidance for Pharmaceutical Manufacturers and/or the Pharmaceutical Research and Manufacturers of America's Code on Interactions with Healthcare Professionals. Several states also impose other marketing restrictions or require pharmaceutical companies to make marketing or price disclosures to the state. There are ambiguities as to what is required to comply with these state requirements and if we fail to comply with an applicable state law requirement, we could be subject to penalties.

***Regulations Governing Data Collection and the Use, Processing and Cross-Border Transfer of Personal Information***

We also may be or may become subject to various state and foreign laws governing the privacy and security of health information, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

For example, California has enacted the California Consumer Privacy Act (CCPA), which creates new individual privacy rights for California consumers (as defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. Effective as of January 2020, the CCPA requires covered companies to provide certain disclosures to consumers about its data collection, use and sharing practices, and to provide affected California residents with ways to opt out of certain sales or transfers of personal information, and also regulates employee information. Further, a new California privacy law, the California Privacy Rights Act (CPRA), was passed by California voters in November 2020. The CPRA will create additional obligations with respect to processing and storing personal information that are scheduled to take effect on January 1, 2023 (with certain provisions having retroactive effect to January 1, 2022). While there is currently an exception in the CCPA and CPRA for protected health information that is subject to HIPAA, the CCPA and CPRA may impact our business activities. Other U.S. states also are considering omnibus privacy legislation, and industry organizations regularly adopt and advocate for new standards in these areas.

In addition, as of May 25, 2018, the General Data Protection Regulation (GDPR) regulates the collection and use of personal data in the European Union (EU). The GDPR covers any business, regardless of its location, that provides goods or services to residents in the EU and, thus, could incorporate any activities we undertake in EU member states. The GDPR imposes strict requirements on controllers and processors of personal data, including special protections for "sensitive information," which includes health and genetic information of individuals residing in the EU. GDPR grants individuals the opportunity to object to the processing of their personal information, allows them to request deletion of personal information in certain circumstances, and provides the individual with an express right to seek legal remedies in the event the individual believes his or her rights have been violated. Further, the GDPR imposes strict rules on the transfer of personal data out of the EU to regions that have not been deemed to offer "adequate" privacy protections, such as the U.S. currently. Failure to comply with the requirements of the GDPR and the related national data protection laws of the EU member states, which may deviate slightly from the GDPR, may result in warning letters, mandatory audits and financial penalties, including fines of up to 4% of global revenues, or €20,000,000, whichever is greater.

Further to the United Kingdom's (UK) exit from the EU on January 31, 2020, the GDPR ceased to apply in the UK at the end of the transition period on December 31, 2020. However, as of January 1, 2021, the UK's European Union (Withdrawal) Act 2018 incorporated the GDPR (as it existed on December 31, 2020 but subject to certain UK specific amendments) into UK law (referred to as the 'UK GDPR'). The UK GDPR and the UK Data Protection Act 2018 set out the UK's data protection regime, which is independent from but aligned to the EU's data protection regime. Non-compliance with the UK GDPR may result in monetary penalties of up to £17.5 million or 4% of worldwide revenue, whichever is higher. The UK, however, is now regarded as a third country under the EU's GDPR which means that transfers of personal data from the EEA to the UK will be restricted unless an appropriate safeguard, as recognized by the EU's GDPR, has been put in place. Although under the EU-UK Trade Cooperation Agreement it is lawful to transfer personal data between the UK and the EEA for a 6 month period following the end of the transition period, with a view to achieving an adequacy decision from the European Commission during that period. Like the EU GDPR, the UK GDPR restricts personal data transfers outside the UK to countries not regarded by the UK as providing adequate protection (this means that personal data transfers from the UK to the EEA remain free flowing). There is significant uncertainty related to the manner in which data protection authorities will seek to enforce compliance with GDPR. For example, it is unclear whether the authorities will conduct random audits of companies doing business in the EU or UK, or act solely after complaints are filed claiming a violation of the GDPR or UK GDPR.

***Other Regulations***

We are also subject to numerous federal, state and local laws relating to such matters as safe working conditions, manufacturing practices, environmental protection, fire hazard control, and disposal of hazardous or potentially hazardous substances. We may incur significant costs to comply with such laws and regulations now or in the future.

**Competition**

The biotechnology and pharmaceutical industries are characterized by rapid innovation, intense and dynamic competition and a strong emphasis on proprietary products. While we believe that our technology, scientific knowledge and experience in the field of cellular immunotherapy provide us with competitive advantages, we face potential competition from many different sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and governmental agencies and public and private research institutions, as well as standard-of-care treatments, new products undergoing development and combinations of existing and new therapies. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies, including combinations thereof, that may become available in the future.

Cellular immunotherapies for the treatment of cancer have recently been an area of significant research and development by academic institutions and biopharmaceutical companies. Novartis AG (Novartis) and Kite Pharma, Inc. (Kite) were the first to obtain FDA approval for autologous CAR T-cell therapies for the treatment of certain cancers. Novartis obtained FDA approval to commercialize Kymriah in August 2017 for the treatment of children and young adults with relapsed / refractory B-cell acute lymphoblastic leukemia and, in May 2018, for the treatment of adults with relapsed / refractory diffuse large B-cell lymphoma. In October 2017, Kite obtained FDA approval to commercialize Yescarta for the treatment of adults with relapsed / refractory diffuse large B-cell lymphoma.

We are developing our off-the-shelf NK- and T-cell product candidates for the treatment of cancer. While we believe our use of clonal master iPSC lines for the production of our off-the-shelf NK- and T-cell product candidates is highly differentiated, a number of companies are currently focused on the development of cellular immunotherapies for the treatment of cancer including Allogene Therapeutics, Inc., Atara Biotherapeutics, Inc., bluebird bio, Inc., Bristol-Myers Squibb Company, Cellectis SA, CRISPR Therapeutics AG, Gilead Sciences, Inc., Intellia Therapeutics, Inc., Iovance Biotherapeutics, Inc., Johnson & Johnson, Legend Biotech Corporation, NantKwest, Inc., Nkarta, Inc., Novartis AG, Sanofi SA, and Takeda Pharmaceutical Company Limited. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

We are developing ProTmune as a next-generation mobilized peripheral blood graft for patients undergoing allogeneic HSCT. ProTmune is designed to prevent GvHD and other life-threatening complications that compromise the procedure's curative potential. There are currently no FDA-approved therapies for the prevention of acute GvHD. Corticosteroids, or steroids, remain the first-line of treatment for GvHD, and second-line therapy consists of off-label use of immunosuppressive agents. We are aware of other companies and medical centers that are developing prophylaxes for GvHD and treatments for acute GvHD and other life-threatening complications of HSCT, including AbbVie Inc., Bristol-Myers Squibb Company, and Incyte Corporation.

We compete against our competitors in recruiting and retaining qualified scientific and management personnel and establishing clinical study sites and subject enrollment for clinical studies, as well as in acquiring technologies complementary to, or necessary for, our programs. Many of our competitors, either alone or with their collaboration partners, have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development of product candidates,

obtaining FDA and other regulatory approvals of treatments and commercializing those treatments. Accordingly, our competitors may be more successful than us in obtaining approval for treatments and achieving widespread market acceptance.

We anticipate that we will face intense and increasing competition as new products enter the market and advanced technologies become available. We expect any treatments that we develop and commercialize to compete on the basis of, among other things, efficacy, safety, convenience of administration and delivery, price, the level of generic competition and the availability of reimbursement from government and other third-party payers. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market.

**Insurance**

We maintain product liability insurance for our clinical trials. We intend to expand our insurance coverage to include the sale of commercial products if marketing approval is obtained for products in development. However, insurance coverage is becoming increasingly expensive, and we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. In addition, we may not be able to obtain commercially reasonable product liability insurance for any products approved for marketing.

**Human Capital**

As of December 31, 2020, we employed 279 employees, all of whom are full-time employees, including 127 in research and development, 113 in clinical development, manufacturing and regulatory affairs and 39 in general and administrative. We have never had a work stoppage, and none of our employees is represented by a labor organization or under any collective bargaining arrangements. We consider our employee relations to be good.

We focus on identifying, recruiting, developing and retaining a team of highly talented and motivated employees. The principal purposes of our equity and cash incentive plans are to attract, retain and reward personnel through the granting of stock-based and cash-based compensation awards, as well providing our employees with the opportunity to participate in our employee stock purchase plan, in order to increase stockholder value and the success of our company by motivating such individuals to perform to the best of their abilities and achieve our objectives. The success of our business is fundamentally connected to the well-being, health and safety of our employees. In an effort to protect the health and safety of our employees, we took proactive action from the earliest signs of the COVID-19 outbreak, which included implementing social distancing policies at our facilities, facilitating remote working arrangements and imposing employee travel restrictions.

**Corporate Information**

We were incorporated in Delaware in 2007, and are headquartered in San Diego, CA. Our principal executive office is located at 3535 General Atomics Court, Suite 200, San Diego, CA 92121, and our telephone number is (858) 875-1800. Our website address is www.fatetherapeutics.com. We do not incorporate the information on or accessible through our website into this Annual Report on Form 10-K, and you should not consider any information on, or that can be accessed through, our website a part of this Annual Report on Form 10-K.

We own various U.S. federal trademark registrations and applications, and unregistered trademarks, including Fate Therapeutics®, our corporate logo. All other trademarks or trade names referred to in this document are the property of their respective owners. Solely for convenience, the trademarks and trade names in this document are referred to without the symbols® and ™, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

**Available Information**

We post our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, on the Investors section of our public website (www.fatetherapeutics.com) as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. In addition, you can read our SEC filings over the Internet at the SEC's website at www.sec.gov. The contents of these websites are not incorporated into this Annual Report on Form 10-K. Further, our references to the URLs for these websites are intended to be inactive textual references only.

## Item 1A. Risk Factors

*You should carefully consider the following risk factors, as well as the other information in this Annual Report on Form 10-K, and in our other public filings. The occurrence of any of these risks could harm our business, financial condition, results of operations and/or growth prospects or cause our actual results to differ materially from those contained in forward-looking statements we have made in this report and those we may make from time to time. You should consider all of the risk factors described in our public filings when evaluating our business.*

### Risks Related to the Discovery, Development and Regulation of Our Product Candidates

***If we fail to complete the preclinical or clinical development of, or to obtain regulatory approval for, our product candidates, our business would be significantly harmed.***

All of our product candidates are currently in research or early clinical development. We have not completed clinical development of or obtained regulatory approval for any of our product candidates. Only a small percentage of research and development programs ultimately result in commercially successful products, and we cannot assure you that any of our product candidates will demonstrate the safety, purity and potency, or efficacy profiles necessary to support further preclinical study, clinical development or regulatory approval.

We may delay or cancel our ongoing and planned clinical development activities or research and development activities for any of our product candidates for a variety of reasons, including:

- determining that a product candidate is ineffective, causes harmful side effects, or otherwise presents unacceptable safety risks during clinical trials or has an unfavorable toxicity profile in preclinical studies to support clinical investigation;
- difficulties in manufacturing or distributing a product candidate, including the inability to manufacture and distribute a product candidate in a sufficient quantity, suitable form, or in a cost-effective manner, or under protocols and processes and with materials and facilities acceptable to the FDA for the conduct of clinical trials or for marketing approval;
- our prioritization of other product candidates for advancement or the emergence of competing product candidates developed by others, including a decision to cease research and development of any existing product candidate due to the potential obsolescence of our product candidate by a competing product or product candidate or our determination that another of our existing or future product candidates has greater potential for clinical development, regulatory approval, or commercialization, including potentially greater therapeutic benefit, a more favorable safety or efficacy profile, a more consistent or more cost effective manufacturing process, or more a favorable commercial profile, including greater market acceptance or commercial potential, or more advantageous intellectual property position;
- the proprietary rights of third parties, which may preclude us from developing, manufacturing or commercializing a product candidate;
- determining that a product candidate may be uneconomical to develop, manufacture, or commercialize, or may fail to achieve market acceptance or an adequate pricing and reimbursement profile;
- our inability to secure or maintain relationships with strategic partners that may be necessary for advancement of a product candidate into or through clinical development, regulatory approval and commercialization in any particular indication(s) or geographic territory(ies); or
- difficulty establishing predictive preclinical models for demonstration of safety and efficacy of a product candidate in one or more potential therapeutic areas for clinical development.

Additionally, we will only be able to obtain regulatory approval to market a product candidate if we can demonstrate, to the satisfaction of the FDA or comparable foreign regulatory authorities, in well-designed and conducted clinical trials that such product candidate is manufactured in accordance with applicable regulatory requirements, is safe, pure and potent, or effective, and otherwise meets the appropriate standards required for approval for a particular indication. Our ability to obtain regulatory approval of our product candidates depends on, among other things, completion of additional preclinical studies, process development and manufacturing activities, and clinical trials, whether our clinical trials demonstrate statistically significant efficacy with safety profiles that do not potentially outweigh the therapeutic benefit, and whether regulatory agencies agree that the data from our clinical trials and our manufacturing operations are sufficient to support approval. Securing regulatory approval also requires the submission of information about product manufacturing operations to, and inspection of manufacturing facilities by, the relevant regulatory authority. The final results of our current and future clinical trials may not meet the FDA's or other regulatory agencies' requirements to approve a product candidate for marketing, and the regulatory agencies may otherwise determine that our manufacturing operations are insufficient to support approval. We may need to conduct preclinical studies and clinical trials that we currently do not anticipate. If we fail to complete preclinical or clinical development of, or obtain regulatory approval for, our product candidates, we will not be

able to generate any revenues from product sales and our ability to receive milestone or other payments under any collaboration agreements may be impaired, which will harm our business, prospects, financial condition and results of operations.

***We may face delays in initiating, conducting or completing our clinical trials, and we may not be able to initiate, conduct or complete them at all.***

We are heavily dependent on our ability to complete the clinical development of, and obtain regulatory approval for, our product candidates. We have not completed the clinical trials necessary to support an application for approval to market any of our product candidates. We, or any investigators who initiate or conduct clinical trials of our product candidates, may experience delays in our current or future clinical trials, and we do not know whether we or our investigators will be able to initiate, enroll patients in, or complete, clinical trials of our product candidates on time, if at all. Current and future clinical trials of our product candidates may be delayed, unsuccessful or terminated, or not initiated at all, as a result of many factors, including factors related to:

- difficulties in identifying eligible patients for participation in clinical trials of our product candidates, due in part to our focus on the development of certain of our product candidates for the treatment of rare diseases;
- difficulties enrolling a sufficient number of suitable patients to conduct clinical trials of our product candidates, including difficulties resulting from patients enrolling in studies of therapeutic product candidates sponsored by our competitors and difficulties resulting from patient availability as a result of shelter-in-place orders, mandated travel restrictions, prioritization of hospital and other medical resources toward pandemic efforts, policies and procedures implemented at clinical sites with respect to the conduct of clinical trials, and other precautionary measures taken in treating patients or in practicing medicine in response to the COVID-19 pandemic;
- difficulties determining suitable doses of our novel cell product candidates for evaluation in clinical trials;
- difficulties in obtaining agreement from regulatory authorities on study endpoints and/or study duration, achieving study endpoints, the amount and sufficiency of data demonstrating efficacy and safety, and completing data analysis in clinical trials for any of our product candidates;
- difficulties in obtaining agreement from regulatory authorities on the preclinical safety and efficacy data, the manufacturing requirements, and the clinical trial design and parameters necessary for an IND application to go into effect to initiate and conduct clinical trials for any of our current product candidates and any other product candidates that we may identify;
- the occurrence of unexpected safety issues or adverse events in any ongoing or future clinical trials of our product candidates, including in trials of our product candidates conducted by investigator-sponsors;
- securing and maintaining the support of clinical investigators and investigational sites, including investigators and sites who may conduct clinical trials under an investigator-sponsored IND with our financial support, and obtaining IRB approval at each site for the conduct of our clinical trials;
- governmental or regulatory delays, including any delays due to limitations on the availability of governmental and regulatory agency personnel to review regulatory filings, conduct site inspections or engage in discussions with us as a result of the COVID-19 pandemic, failure to obtain regulatory approval, or uncertainty or changes in U.S. or foreign regulatory requirements, policy or guidelines;
- limitations on clinical trial conduct at our clinical trial sites resulting from prioritization of hospital and other medical resources toward COVID-19 pandemic efforts, policies and procedures implemented at clinical sites with respect to the conduct of clinical trials including those relating to site initiation, study monitoring, and data collection and analysis, and other precautionary measures taken in treating patients or in practicing medicine in response to the COVID-19 pandemic;
- reaching agreement on acceptable terms with third-party service providers and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different service providers and clinical trial sites;
- failure, by us, cell processing facilities at our clinical trial sites, or third parties that we contract with, to manufacture certain of our product candidates consistently, and in sufficient quantities, in accordance with our protocol-specified manufacturing requirements and applicable regulatory requirements;
- our failure, or the failure of investigators, third-party service providers, or clinical trial sites, to ensure the proper and timely conduct of and analysis of data from clinical trials of our product candidates;
- inability to reach agreement on clinical trial design and parameters with regulatory authorities, investigators, and IRBs;

- failure or delays in obtaining sufficient quantities of suitable raw materials, components, and equipment necessary for the manufacture of any product candidate, including any inability to obtain materials as a result of possible supply chain issues related to the COVID-19 pandemic;
- challenges in distributing our product candidates to clinical trial sites, or failure to establish effective protocols for the supply and transport of our product candidates;
- the costs of conducting clinical trials or manufacturing of our product candidates being greater than we anticipate or the timelines for these activities being longer than we anticipate;
- data monitoring committees recommending suspension, termination or a clinical hold for various reasons, including concerns about patient safety;
- the serious, life-threatening diseases of the patients enrolled in our clinical trials, who may die or suffer adverse medical events during the course of the trials for reasons that may not be related to our product candidates;
- failure of patients to complete clinical trials or adhere to study protocols due to safety issues, side effects, disruptions in study conduct, including study monitoring, data collection and analysis, restrictions on hospital visits or travel relating to the COVID-19 pandemic, or other reasons; and
- approval of competitive agents that may materially alter the standard of care or otherwise render our product candidates or clinical trial designs obsolete.

If there are delays in initiating or conducting any clinical trials of our product candidates or any of these clinical trials are terminated before completion, the commercial prospects of our product candidates will be harmed. In addition, any delays in initiating, conducting or completing our clinical trials or adjustments to certain of our study protocols and procedures, including as a result of the COVID-19 pandemic, will increase our costs, slow down our product candidate development and regulatory approval process, and jeopardize our ability to gain regulatory approval, commence product sales and generate revenues. Furthermore, many of the factors that cause, or lead to, a delay in the initiation, conduct or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates. Any of these occurrences would significantly harm our business, prospects, financial condition, results of operations, and market price of shares of our common stock.

***The manufacture and distribution of our cell product candidates, particularly our iPSC-derived cell product candidates, is complex and subject to a multitude of risks. These risks could substantially increase our costs and limit the clinical and commercial supply of our product candidates, and the development and commercialization of our product candidates could be substantially delayed or restricted if the FDA or other regulatory authorities impose additional requirements on our manufacturing operations or if we are required to change our manufacturing operations to comply with regulatory requirements.***

The manufacture and supply of our cell product candidates involve novel processes that are more complex than those required for most small molecule drugs and other cellular immunotherapies, and accordingly present significant challenges and are subject to multiple risks. For our iPSC-derived product candidates, these complex processes include reprogramming human fibroblasts to obtain iPSCs, in some cases genetically engineering these iPSCs, and differentiating the iPSCs to obtain the desired cell product candidate. As a result of the complexities in manufacturing biologics and distributing cell therapies, the cost to manufacture and distribute biologics and cell therapies in general, and our cell product candidates in particular, is generally higher than traditional small molecule chemical compounds. In addition, our cost of goods development is at an early stage. The actual cost to manufacture and process our product candidates could be greater than we expect and could materially and adversely affect the commercial viability of our product candidates.

We have limited experience in the manufacture of cell-based therapies. We are still developing optimized and reproducible manufacturing processes for clinical and commercial-scale manufacturing of our product candidates, and none of our manufacturing processes have been validated for commercial production of our product candidates. In addition, we are still optimizing our protocols for the supply and transport of our product candidates for distribution to clinical trial sites. Although we are working to develop reproducible and commercially viable manufacturing processes for our product candidates, and effective protocols for the supply and transport of our product candidates, doing so is a difficult and uncertain task.

We may make changes as we continue to develop and refine the manufacturing and distribution processes for our product candidates for advanced clinical trials and commercialization, and we cannot be sure that even minor changes in these processes will not cause our product candidates to perform differently and affect the results of our ongoing and planned clinical trials or the performance of the product once commercialized. In some circumstances, changes in our manufacturing operations, including to our protocols, processes, materials or facilities used, may require us to perform additional preclinical or comparability studies, or to collect additional clinical data from patients prior to undertaking additional clinical studies or filing for regulatory approval for a product candidate. These requirements may lead to delays in our clinical development and commercialization plans for our product candidates, and may increase our development costs substantially.

The manufacturing processes for any products that we may develop are subject to FDA and foreign regulatory authority approval requirements, and we will need to meet, and our contract manufacturing organizations (CMOs) or other third party manufacturers will need to meet, all applicable FDA and foreign regulatory authority requirements on an ongoing basis. The requirements to manufacture ProTmune in close proximity to transplant centers within a short period of time before transplantation present unprecedented complexities associated with ensuring consistent manufacture in compliance with regulatory requirements as necessary for marketing approval and in sufficient quantities for commercial use, if approved. Our existing product candidates are currently manufactured by us or by third-party cell processing facilities or CMOs, including facilities operated by or affiliated with our clinical sites, and we may be required to identify alternative protocols, processes, materials or facilities for the manufacture of any of these product candidates in compliance with applicable regulatory requirements. In addition, we may be required to make changes to our protocols for the supply and transport of our product candidates to enable effective distribution of our product candidates. Any modifications to our manufacturing and supply protocols, processes, materials or facilities, and any delays in, or inability to, establish acceptable manufacturing and supply operations for our product candidates could require us to incur additional development costs or result in delays to our clinical development. If we or our CMOs or other third-party manufacturers are unable to reliably produce products to specifications acceptable to the FDA or other regulatory authorities, we may not obtain or maintain the regulatory approvals we need to commercialize such products. Even if we obtain regulatory approval for any of our product candidates, there is no assurance that either we or our CMOs or other third-party manufacturers will be able to manufacture the approved product to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product, or to meet potential future demand. Additionally, changes in regulatory requirements may require us or our third-party manufacturers to perform additional studies or to modify protocols, processes, materials or facilities for the manufacture of our product candidates or any components thereof. Any of these challenges could delay initiation or completion of clinical trials, require bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidates, impair commercialization efforts, increase our cost of goods, and have an adverse effect on our business, financial condition, results of operations and prospects.

***Our inability to manufacture sufficient quantities of our product candidates, or the loss of our suppliers or third-party contract manufacturers, or our or their failure to supply sufficient quantities of our product candidates at acceptable quality levels or prices, or at all, would materially and adversely affect our business***.

Developing manufacturing processes to support clinical studies and commercialization requirements is a difficult and uncertain task, and there are risks associated with scaling to the level required for clinical trials or commercialization, including, among others, cost overruns, potential problems with process scale-out, process reproducibility, stability and purity issues, lot consistency, and timely availability of acceptable reagents and raw materials. If we are unable to scale to the level required for the conduct of clinical trials or commercialization, we may not be able to produce our product candidates in a sufficient quantity to meet demand.

While certain components required for the production of our product candidates are currently manufactured internally at our facilities, we rely, and expect to continue to rely, on third parties for the manufacture of other components and also to manufacture our product candidates for use in conducting clinical trials. As such, we are required to transfer certain manufacturing process know-how and certain intermediates to third parties, including clinical cell processing facilities operated by our clinical trial sites, and larger-scale facilities operated by either a CMO, or by us, to facilitate manufacture of our product candidates for clinical trials and commercialization. Transferring manufacturing testing and 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 and any CMOs or third parties that we engage for manufacturing our product candidates will need to conduct significant development work to transfer these processes and manufacture each of our product candidates for clinical trials and commercialization. In addition, we may be required to demonstrate the comparability of material generated by any CMO or third parties that we engage for manufacturing our product candidates with material previously produced and used in testing. Any inability to manufacture comparable drug product by us or our CMOs could delay the continued development of our product candidates.

Further, we depend in some instances on third party suppliers, including sole source suppliers, for the provision of reagents, materials, devices and equipment that are used by us and our third party contract manufacturers in the production of our product candidates, including certain of our iPSC-derived cell therapy product candidates and ProTmune. Any disruption to or loss of supply from any of these suppliers could delay our clinical development and commercialization efforts.

In addition to relying on third parties for the manufacture of our product candidates, we also manufacture certain of our product candidates ourselves, and intend to manufacture some or all of the clinical supply of our iPSC-derived NK cell and T-cell product candidates for our ongoing and planned clinical trials. To do so, we will need to scale up our own manufacturing operations, as we do not currently have the infrastructure or capability internally to manufacture sufficient quantities of each of our product candidates to support the conduct of each of our clinical trials or commercialization of each of our product candidates, if approved. Accordingly, we will be required to make significant investments to expand our existing GMP manufacturing capabilities and facilities, establish additional GMP manufacturing facilities, conduct GMP production, and process and scale up development and technology transfer

activities for the manufacture of our product candidates, and our efforts to scale our own manufacturing operations may not succeed. For example, in response to governmental shelter-in-place orders resulting from the COVID-19 pandemic, we may from time to time be required to limit our on-site staff's availability to conduct manufacturing activities at our facility, and we may encounter problems with shortages of qualified personnel, key contractors, laboratory equipment, and materials and supplies for the manufacture of our product candidates. These problems may include employee absenteeism and supply chain failures or delays relating to the COVID-19 pandemic. Two vaccines for COVID-19 were granted Emergency Use Authorization by the FDA in late 2020, and more are likely to be authorized in the coming months. The resultant demand for vaccines and potential for manufacturing facilities and materials to be commandeered under the Defense Production Act of 1950, or equivalent foreign legislation, may make it more difficult to obtain materials or manufacturing slots for the product candidates needed for our clinical trials, which could lead to delays in these trials. Further, delays in regulatory inspections, commissioning and receiving regulatory approvals for our manufacturing capabilities or facilities, including new facilities, as a result of limited governmental resources due to the COVID-19 pandemic or otherwise, could delay our development plans, including the initiation and conduct of our ongoing and planned clinical trials, and thereby limit our opportunities for growth. In addition, we and our third-party manufacturers may have limited manufacturing capacity for certain product candidates or components, and we may not be able to locate additional or replacement manufacturing capacity on a reasonable basis or at all.

Even if we are successful in developing manufacturing capabilities sufficient for clinical and commercial supply, problems with manufacturing operations, including difficulties with production costs and yields, quality control, stability of the product, quality assurance testing, operator error, shortages of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations, could result in product defects or manufacturing failures that result in lot failures, product recalls, product liability claims or insufficient supplies of our product candidates for our ongoing and planned clinical trials or eventual commercialization. Furthermore, certain of the components currently used in manufacturing our product candidates are research-grade only, and we may encounter problems obtaining or achieving adequate quantities and quality of clinical grade materials that meet FDA, European Medicines Agency, or other applicable standards or specifications with consistent and acceptable production yields and costs. In addition, if contaminants are discovered in our supply of product candidates or in the manufacturing facilities, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. Any such events could delay or prevent our ability to obtain regulatory approval for or commercialize our product candidates, which would adversely affect our business, prospects, financial condition and results of operations.

***We are subject to risks associated with the spread of the novel coronavirus, SARS-CoV-2 (COVID-19), and the global pandemic could seriously impact the research and development of our product candidates.***

The COVID-19 pandemic has broadly affected the global economy, resulted in significant travel and work restrictions in many regions and put a significant strain on healthcare resources. The pandemic has had, and we expect it will continue to have, an impact on our operations and on the operations of our collaborators, third-party contractors and other entities, including governmental agencies with which we interact. In particular, the requirement that a significant portion of our employees work remotely has had an impact on our operations and research and development of our product candidates. Additionally, we have been subject to temporary pauses in enrollment and dosing implemented by some clinical trial sites due to COVID-19, and some clinical trial sites have also restricted initiation of new trials as well as visits by sponsors and clinical research organizations (CROs) for ongoing trials to protect both site staff and patients from possible COVID-19 exposure.

The COVID-19 pandemic may in the future impact the clinical development of our product candidates if we are subject to restrictions or limitations on, or delays in, the performance of study procedures (particularly any procedures that may be deemed non-essential), participant dosing, distribution of our product candidates or clinical trial materials, study monitoring, or site inspections and data analysis, including as a result of changes in hospital or research institution policies, federal, state or local regulations, prioritization of hospital and other medical resources toward pandemic efforts, reduced availability of site staff supporting the conduct of clinical trials, heightened risks of exposure of study participants, principal investigators or site staff to COVID-19 if an outbreak occurs in their geographic region, or other reasons related to the pandemic. Quarantine or other travel limitations (whether voluntary or required) also may impede participant movement, affect access to study sites, or interrupt healthcare services.

Furthermore, the pandemic could cause delays in review and response times by the FDA and other regulatory agencies, or such health regulatory agencies may refuse to accept data from our clinical trials due to mitigation strategies we implement in response to the COVID-19 pandemic and current regulatory guidance. In addition, our ability to manufacture and ship our product candidates for our clinical trials may be impacted if we, or any third parties which manufacture and supply materials used in either the manufacture of our product candidates or the conduct of our research and development activities, or which perform certain testing relating to our product candidates, are adversely impacted by restrictions resulting from the coronavirus outbreak.

The extent to which the pandemic affects our operations and the research and development of our product candidates will depend on continuously changing circumstances, which are highly uncertain and cannot be predicted with confidence, such as the duration of the pandemic, including future waves of infection, and the actions taken to contain the pandemic or mitigate its impact. While the ultimate impact of COVID-19 on our business is highly uncertain, any negative impacts that materialize could materially adversely affect our clinical development and operations, financial performance and stock price.

***Because our approach to the development of product candidates is based on novel and unproven technologies, it is subject to a substantial degree of technological uncertainty and we may not succeed in developing any of our product candidates.***

All of our product candidates are currently in research, preclinical or clinical development. Only a small number of research and development programs ultimately result in commercially successful drugs. The development of cell therapies is a relatively new and emerging field, and the scientific research that forms the basis of our efforts to discover and develop programmed cellular immunotherapies is ongoing. We may determine to incorporate information learned from this research into the design of our ongoing Phase 2 clinical trial of ProTmune and our ongoing Phase 1 clinical trials of our iPSC product candidates, as well as our planned future clinical trials, which could delay or impair our clinical development activities. We may ultimately discover that our product candidates do not possess certain properties required for therapeutic effectiveness or protection from toxicity in our target patient populations. In addition, our product candidates may demonstrate different chemical and pharmacological properties in patients than they do in laboratory studies. It may take many years before we develop a full understanding of the pharmacological properties of our product candidates, and we may never know precisely how they function in vivo. As with any new biologic or product developed using novel technologies, our product candidates have an unknown immunogenicity profile. As a result, our product candidates may trigger immune responses that inhibit their therapeutic effects or cause adverse side effects. In addition, one or more of our product candidates may:

- be found ineffective or cause harmful side effects during preclinical studies or clinical trials;
- fail to receive necessary regulatory approvals on a timely basis or at all;
- be precluded from commercialization by proprietary rights of third parties;
- be difficult to manufacture on a large scale; or
- be uneconomical to commercialize or fail to achieve market acceptance.

Any such problems that affect one of our product candidates may have an unfavorable impact on all of our product candidates. As a result, we may never succeed in developing a marketable product and we may never become profitable, which would have an adverse effect on our business, prospects, financial condition, results of operations, and market price of shares of our common stock.

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

We are required to identify and enroll a sufficient number of patients with the disease under investigation for each of our ongoing and planned clinical trials of our product candidates, and we may not be able to identify and enroll a sufficient number of patients, or those with required or desired characteristics and who meet certain criteria, in a timely manner. In addition, we will be competing with other clinical trials of product candidates being developed by our competitors in the same therapeutic areas, and potential patients who might be eligible for enrollment in one of our clinical trials may instead choose to enroll in a trial being conducted by one of our competitors.

Our ability, and the ability of investigators, to enroll patients in our ongoing and planned clinical trials of our product candidates is affected by factors including:

- the ability to identify, solicit and recruit a sufficient number of patients;
- severity of the disease under investigation;
- design of the trial protocol;
- the relatively small size and nature of the patient populations for certain of our clinical trials;
- eligibility criteria for the trials in question;
- perceived risks and benefits of the product candidate under study, including any perceived risks associated with iPSC-derived product candidates, which we believe are the first ever iPSC-derived cell therapies cleared by the FDA for clinical investigation in the United States;

- the availability of competing therapies and clinical trials;
- efforts to facilitate timely enrollment in clinical trials;
- the availability of time and resources at the limited number of institutions at which our clinical trials are or will be conducted, including any constraints on resources, or policies and procedures implemented, at hospitals and clinical trial sites as a result of the COVID-19 pandemic;
- the availability of cells suitable for the manufacture of our clinical product candidates from eligible and qualified donors for certain of our product candidates, including ProTmune;
- the ability to monitor patients adequately during and after treatment, including through remote monitoring if required as a result of precautionary changes implemented at certain clinical trial sites as a result of the COVID-19 pandemic; and
- the proximity and availability of clinical trial sites for prospective patients.

In addition, certain of our clinical trial sites have delayed or paused patient enrollment in clinical trials as a result of the COVID-19 pandemic, and quarantines or other travel limitations relating to the COVID-19 pandemic may impede patient movement and affect access to study sites, which may further impact patient enrollment in our clinical trials. The extent and duration of such delays and disruptions, and the overall impact on the timing and conduct of our clinical trials, are uncertain. If we have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay or terminate ongoing or planned clinical trials, either of which would have an adverse effect on our business, prospects, financial condition, results of operations, and market price of shares of our common stock.

***The clinical development of our product candidates could be substantially delayed if we are required to conduct unanticipated studies, including preclinical studies or clinical trials, or if the FDA imposes other requirements or restrictions including on the manufacture, of our product candidates.***

The FDA may require us to generate additional preclinical, product, manufacturing, or clinical data as a condition to continuing our current clinical trials, or initiating and conducting any future clinical trials of our current product candidates or other cell product candidates that we may identify. Additionally, the FDA may in the future have comments, or impose requirements, on the conduct of our clinical trials or the initiation of clinical trials or any of our other iPSC-derived cell product candidates, including the protocols, processes, materials and facilities we use to manufacture our product candidates and potential future product candidates in support of clinical trials. Any requirements to generate additional data, or redesign or modify our protocols, processes, materials or facilities, or other additional comments, requirements or impositions by the FDA, may cause delays in the initiation or conduct of the current or future clinical trials for our product candidates and subsequent development activities for our product candidates, and could require us to incur additional development or manufacturing costs and resources, seek funding for these increased costs or resources or delay our timeline for, or cease, our preclinical or clinical development activities for our product candidates, or could create uncertainty and additional complexity in our ability to obtain regulatory approval for our product candidates.

Further, if the results of our clinical trials are inconclusive, or if there are safety concerns or adverse events associated with our existing product candidates or any other product candidates we may identify, we may:

- be delayed in obtaining, or unable to obtain, regulatory approval for such product candidates;
- be required to amend the protocols for our clinical trials, perform additional nonclinical studies or clinical trials to support approval or be subject to additional post-marketing testing requirements;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings or contraindications; or
- in the event a product candidate is approved, have regulatory authorities withdraw their approval of the product or impose restrictions on its use.

Even if our current and planned clinical trials are successful, we will need to conduct additional clinical trials, which may include registrational trials, trials in additional patient populations or under different treatment conditions, and trials using different manufacturing protocols, processes, materials or facilities or under different manufacturing conditions, before we are able to seek approvals for our product candidates from the FDA and regulatory authorities outside the United States to market and sell these product candidates. If we fail to meet the requirements to support continued clinical development, our clinical development activities for any of our product candidates are delayed or suspended, or we fail to obtain or maintain regulatory approvals with an acceptable scope, our business, prospects, financial condition and results of operations will be harmed.

***We are pursuing multiple programs and product candidates in our novel cell therapy development pipeline using an approach that is designed to enable rapid incorporation of new product features. If we elect to incorporate these new features into next-generation product candidates, this may render our existing product candidates obsolete, and we may devote our limited resources in pursuit of a particular program for which there is a greater potential for success and fail to capitalize on development opportunities or product candidates including those which may be more advanced in development.***

We focus on the development of programmed cellular immunotherapies for patients with cancer, including off-the-shelf NK- and T-cell product candidates derived from clonal master engineered iPSC lines. Because our iPSC product platform is designed to enable rapid incorporation of novel functional product features in an evolving clinical setting, we may elect to incorporate these discoveries into next-generation product candidates that render our existing product candidates, including product candidates under clinical development, obsolete. Additionally, because we have limited financial and personnel resources, we may elect or be required to abandon or delay the pursuit of opportunities with existing or future product candidates, including those that may be more advanced in development than those we ultimately elect to pursue. Due to these factors, our spending on current and future research and development programs and product candidates and the scientific innovation arising from these expenditures, may not yield commercially viable product candidates.

***We study our product candidates in patient populations with significant comorbidities that may result in deaths or serious adverse events or unacceptable side effects and require us to abandon or limit our clinical development activities.***

Patients treated with our current product candidates may also receive chemotherapy, radiation, and/or other high dose or myeloablative treatments in the course of treatment of their disease, and may therefore experience side effects or adverse events, including death, that are unrelated to our product candidates. While these side effects or adverse events may be unrelated to our product candidates, they may still affect the success of our clinical studies. The inclusion of critically ill patients in our clinical studies may result in deaths or other adverse medical events due to underlying disease or to other therapies or medications that such patients may receive. Any of these events could prevent us from advancing our product candidates through clinical development, and from obtaining regulatory approval, and would impair our ability to commercialize our product candidates. Any inability to advance our existing product candidates or any other product candidate through clinical development would have a material adverse effect on our business, and the value of our common stock would decline.

***Because our product candidates are based on novel technologies, it is difficult to predict the regulatory approval process and the time, the cost and our ability to successfully initiate, conduct and complete clinical development, and obtain the necessary regulatory and reimbursement approvals, required for commercialization of our product candidates.***

Our cell programming technology and platform for generating cell therapy products using iPSCs represent novel therapeutic approaches, and to our knowledge there are currently no iPSC-derived cell products approved anywhere in the world for commercial sale. As such, it is difficult to accurately predict the type and scope of challenges we may incur during development of our product candidates, and we face uncertainties associated with the preclinical and clinical development, manufacture and regulatory requirements for the initiation and conduct of clinical trials, regulatory approval, and reimbursement required for successful commercialization of these product candidates. In addition, because our iPSC-derived cell product candidates are all in the early clinical or preclinical stage, we are currently assessing safety in humans and have not yet been able to assess the long-term effects of treatment. Animal models and assays may not accurately predict the safety and efficacy of our product candidates in our target patient populations, and appropriate models and assays may not exist for demonstrating the safety and purity of our product candidates, as required by the FDA and other regulatory authorities for ongoing clinical development and regulatory approval.

The preclinical and clinical development, manufacture, and regulatory requirements for approval of novel product candidates such as ours can be more expensive and take longer than for other more well-known or extensively studied pharmaceutical or biopharmaceutical product candidates due to a lack of prior experiences on the side of both developers and regulatory agencies. Additionally, due to the uncertainties associated with the preclinical and clinical development, manufacture, and regulatory requirements for approval of our product candidates, we may be required to modify or change our preclinical and clinical development plans or our manufacturing activities and plans, or be required to meet stricter regulatory requirements for approval. Any such modifications or changes could delay or prevent our ability to develop, manufacture, obtain regulatory approval or commercialize our product candidates, which would adversely affect our business, financial condition and results of operations.

Cellular immunotherapies, and stem cell therapies and iPSC-derived cell therapies in particular, represent relatively new therapeutic areas, and the FDA has cautioned consumers about potential safety risks associated with cell therapies. To date, there are relatively few approved cell therapies. As a result, the regulatory approval process for product candidates such as ours is uncertain and may be more expensive and take longer than the approval process for product candidates based on other, better known or more extensively studied technologies and therapeutic approaches. For example, there are currently no FDA approved products with a label designation that supports the use of a product to prevent acute graft-versus-host disease in patients undergoing allogeneic hematopoietic

stem cell transplantation (HSCT), which makes it difficult to determine the clinical endpoints and data required to support an application for regulatory approval, and the time and cost required to obtain regulatory approval in the United States for ProTmune.

Regulatory requirements in the United States and in other countries governing cell therapy products have changed frequently and the FDA or other regulatory bodies may change the requirements, or identify different regulatory pathways, for approval for any of our product candidates. For example, within the FDA, the Center for Biologics Evaluation and Research, or CBER, restructured and created a new Office of Tissues and Advanced Therapies to better align its oversight activities with FDA Centers for Drugs and Medical Devices. It is possible that over time new or different divisions may be established or be granted the responsibility for regulating cell and/or gene therapy products, including iPSC-derived cell products, such as ours. As a result, we may be required to change our regulatory strategy or to modify our applications for regulatory approval, which could delay and impair our ability to complete the preclinical and clinical development and manufacture of, and obtain regulatory approval for, our product candidates. Changes in regulatory authorities and advisory groups, or any new requirements or guidelines they promulgate, may lengthen the regulatory review process, require us to perform additional studies, increase our development and manufacturing costs, lead to changes in regulatory pathways, positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions. As we advance our product candidates, we will be required to consult with the FDA and other regulatory authorities, and our product candidates will likely be reviewed by an FDA advisory committee. We also must comply with applicable requirements, and if we fail to do so, we may be required to delay or discontinue development of our product candidates. Delays or unexpected costs in obtaining, or the failure to obtain, the regulatory approval necessary to bring a potential product to market could impair our ability to generate sufficient product revenues to maintain our business.

***Preliminary data and interim results we disclose may change as more patient data becomes available or as we make changes to our protocols or manufacturing processes, and such interim results and results from earlier studies may not be predictive of the final results, or of later studies or future clinical trials.***

We may from time to time disclose results from preclinical testing or preliminary data or interim results from clinical studies of our product candidates. Such results from preclinical testing, process development and manufacturing activities, and clinical studies, including interim clinical trial results as of specified data cutoff dates and results of earlier clinical studies with similar product candidates, are not necessarily predictive of future results, including later clinical trial results. While we have demonstrated in preclinical models that a single administration of ProTmune resulted in a statistically-significant reduction in GvHD score and improvement in survival, as compared to vehicle-treated cells, we may not observe similar results in future preclinical or clinical studies of ProTmune, including our Phase 1/2 PROTECT study. Additionally, the data reported from the Phase 1 stage of PROTECT as of the November 26, 2018 data cut-off date may not continue for these subjects or be repeated or observed in ongoing or future studies involving ProTmune, including in the Phase 2 stage of the PROTECT study. It is possible that subjects for whom events of acute GvHD have been reduced or eliminated may experience acute GvHD in the future, as there is limited data concerning long-term safety and efficacy following treatment with ProTmune. Accordingly, ProTmune may not demonstrate in the Phase 2 stage of PROTECT, or in subsequent trials, an adequate safety or efficacy profile to support further development or commercialization.

The results of our current and future clinical trials may differ from results achieved in earlier preclinical and clinical studies for a variety of reasons, including:

- we may not demonstrate the potency and efficacy benefits observed in previous studies;
- our efforts to improve, standardize and automate the manufacture and supply of our product candidates and any resulting deviations in the manufacture of our product candidates, may adversely affect the safety, purity, potency, stability, or efficacy of such product candidates;
- differences in study design, including differences in conditioning regimens, eligibility criteria, and patient populations;
- advancements in the standard of care may affect our ability to demonstrate efficacy or achieve study endpoints in our current or future clinical trials; and
- safety issues or adverse events in patients that enroll in our current or future clinical trials.

Additionally, some clinical trials of our product candidates performed to date were generated from open-label studies and are being conducted at a limited number of clinical sites on a limited number of patients. An “open-label” clinical trial is one where both the patient and investigator know whether the patient is receiving the investigational product candidate or either an existing approved drug or placebo. Most typically, open-label clinical trials test only the investigational product candidate and sometimes may do so at different dose levels. Open-label clinical trials are subject to various limitations that may exaggerate any therapeutic effect as patients in open-label clinical trials are aware when they are receiving treatment. Open-label clinical trials may be subject to a “patient bias” where patients perceive their symptoms to have improved merely due to their awareness of receiving an experimental treatment. In addition, open-label clinical trials may be subject to an “investigator bias” where those assessing and reviewing the physiological

outcomes of the clinical trials are aware of which treatment regimen patients have received and may interpret the information of the treated group more favorably given this knowledge. Accordingly, the preliminary data from our Phase 1 clinical trials of certain of our product candidates may not be predictive of future clinical trials results for these or other product candidates when studied in a controlled environment or larger patient populations.

From time to time, we also publish interim, "top-line," or preliminary data from our clinical studies based on a preliminary analysis of then-available data. Preliminary or interim data from clinical trials that we are conducting are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues, the duration of treatment increases and more patient data become available. These preliminary or interim results and related conclusions also are subject to change following a more comprehensive review of the data related to the particular study or trial. Preliminary or "top-line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim and preliminary data should be viewed with caution until the final data are available. Material adverse changes between preliminary, "top-line," or interim data and final data could significantly harm our business prospects, financial condition and results of operations.

***Even if we obtain regulatory approval for a product candidate, our products will remain subject to regulatory scrutiny.***

Any product candidate for which we obtain marketing approval, along with the manufacturing protocols, processes, materials and facilities, qualification testing, post-approval clinical data, labeling and promotional activities for such product, will be subject to continual and additional requirements of the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information, reports, registration and listing requirements, requirements relating to current cGMP, quality control, quality assurance and corresponding maintenance of records and documents, and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to conditions of approval, or contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product. The FDA closely regulates the post-approval marketing and promotion of pharmaceutical and biological products to ensure such products are marketed only for the approved indications and in accordance with the provisions of the approved labeling. Later discovery of previously unknown problems with our product candidates, manufacturing operations, or failure to comply with regulatory requirements, may lead to various adverse conditions, including significant delays in bringing our product candidates to market and or being precluded from manufacturing or selling our product candidates, any of which could significantly harm our business.

***We expect to rely on orphan drug status to develop and commercialize certain of our product candidates, but our existing orphan drug designations may not confer marketing exclusivity or other expected commercial benefits and we may not be able to obtain orphan drug designations for our other product candidates.***

We expect to rely on orphan drug exclusivity for ProTmune and may rely on orphan drug exclusivity for other product candidates that we may develop. Orphan drug status confers seven years of marketing exclusivity in the United States under the Federal Food, Drug, and Cosmetic Act, and up to ten years of marketing exclusivity in Europe for a particular product in a specified indication, subject to certain conditions. We have been granted orphan drug designation in the United States for *ex vivo* programmed mobilized peripheral blood for the prevention of GvHD in patients undergoing allogeneic hematopoietic cell transplantation, and in the European Union for ProTmune for treatment in hematopoietic stem cell transplantation. While we have been granted these orphan designations, even if we are the first to obtain marketing approval of our product candidates for the applicable indications, we will not be able to rely on these designations to exclude other companies from manufacturing or selling biological products using the same principal molecular structural features for the same indication beyond these timeframes. Furthermore, any marketing exclusivity in Europe can be reduced from ten years to six years if the initial designation criteria have significantly changed since the market authorization of the orphan product. In addition, we may be unable to obtain orphan drug designations for any other product candidates that we are currently developing or may pursue.

For any product candidate for which we are granted orphan drug designation in a particular indication, it is possible that another company also holding orphan drug designation for the same product candidate will receive marketing approval for the same indication before we do. If that were to happen, our applications for that indication may not be approved until the competing company's period of exclusivity expires. Even if we are the first to obtain marketing authorization for an orphan drug indication in the United States, there are circumstances under which a competing product may be approved for the same indication during the seven-year period of marketing exclusivity, such as if the later product is shown to be clinically superior to our orphan product, or if the later product is deemed a different product than ours. Further, the seven-year marketing exclusivity would not prevent competitors from obtaining approval of the same product candidate as ours for indications other than those in which we have been granted orphan drug designation, or for the use of other types of products in the same indications as our orphan product.

***We may be subject to certain regulations, including federal and state healthcare fraud and abuse laws, physician payment transparency laws, anti-bribery and anti-corruption laws and health information privacy and security laws. Any actual or perceived failure to comply with these regulations could have a material adverse effect on our business and financial condition.***

If we obtain FDA approval for any of our product candidates and begin commercializing those products in the United States, our operations may be subject to various federal and state healthcare laws, including, without limitation, fraud and abuse laws, false claims laws, data privacy and security laws, as well as transparency laws regarding payments or other items of value provided to healthcare providers. These laws may impact, among other things, our proposed sales, marketing and education programs. Additionally, we may be subject to state and foreign equivalents of such healthcare laws and regulations, some of which may be broader in scope and may apply regardless of the payor, as well as patient privacy regulation by both the federal government and the states in which we conduct our business. Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge and may not comply under one or more of such laws, regulations, and guidance. Law enforcement authorities are increasingly focused on enforcing fraud and abuse laws, and it is possible that some of our practices may be challenged under these laws. Efforts to ensure that our current and future business arrangements with third parties, and our business generally, will comply with applicable healthcare laws and regulations will involve substantial costs. If our operations, including our arrangements with physicians and other healthcare providers are found to be in violation of any of such laws or any other governmental regulations that apply to us, we may be subject to penalties, including, without limitation, administrative, civil and criminal penalties, damages, fines, disgorgement, contractual damages, reputational harm, diminished profits and future earnings, the curtailment or restructuring of our operations, exclusion from participation in federal and state healthcare programs (such as Medicare and Medicaid), and imprisonment, as well as additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, any of which could adversely affect our ability to operate our business and our financial results.

**Risks Related to Our Reliance on Third Parties**

***We have limited experience manufacturing our product candidates on a clinical scale, and no experience manufacturing on a commercial scale. We are, and expect to continue to be, dependent on third parties to conduct some or all aspects of manufacturing of our product candidates for use in clinical trials and for commercial sale, if approved. Our business could be harmed if those third parties fail to perform satisfactorily.***

We currently rely, and expect to continue to rely, on third parties, including cell processing facilities associated with clinical trial sites, to manufacture our product candidates, or certain components required for the manufacture of our product candidates, for use in conducting clinical trials and for commercial sale upon approval of any of our product candidates. In addition, we have not yet caused our product candidates to be manufactured or processed on a commercial scale and may not be able to do so for any of our product candidates.

The facilities used to manufacture our product candidates, including our own facilities, must be evaluated by the FDA or other foreign regulatory agencies pursuant to inspections that will be conducted after we submit an application to the FDA or other foreign regulatory agencies. If the FDA or a comparable foreign regulatory authority finds deficiencies with or does not approve these facilities for the manufacture of our product candidates or if it later finds deficiencies or withdraws any such approval in the future, or in the event of problems with any of the manufacturing facilities that we rely on to manufacture our product candidates or materials, we may not be able to locate additional or replacement facilities for such product candidates or materials in a timely manner and on commercially reasonable terms, or at all. This would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved.

Reliance on third parties for manufacture of our product candidates and components utilized in manufacturing our product candidates entails certain risks, including reliance on the third party for regulatory compliance and quality assurance, the possibility that the third-party manufacturer does not maintain the financial, personnel or other resources to meet its obligations, the possibility that the third party fails to manufacture such components, or our product candidates or any products we may eventually commercialize, in accordance with our specifications, misappropriation of our proprietary information, including our trade secrets and know-how, and the possibility of termination of our manufacturing relationship 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 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 little control over our manufacturers' compliance with these regulations and standards.

In some cases, the technical skills required to manufacture our product candidates may be unique or proprietary to a particular CMO, and we may have difficulty, or there may be contractual restrictions prohibiting us from, transferring such skills to a back-up or alternate supplier if needed, or we may be unable to transfer such skills at all. In addition, if we are required to change contract manufacturers for any reason, we will be required to verify that the new CMO maintains facilities and procedures that comply with quality standards and with all applicable regulations. We will also need to verify, such as through a manufacturing comparability study, that any new manufacturing process will produce our product candidate according to the specifications previously submitted to the FDA or another regulatory authority. The delays associated with the verification of a new CMO could negatively affect our ability to develop product candidates or commercialize our products in a timely manner or within budget. In addition, changes in manufacturers often involve changes in manufacturing procedures and processes, which could require that we conduct bridging studies between our prior clinical supply used in our clinical trials and that of any new manufacturer. We may be unsuccessful in demonstrating the comparability of clinical supplies, which could require the conduct of additional clinical trials.

In addition, the operations of our third-party manufacturers may be disrupted or delayed by the outbreak of the COVID-19 pandemic, which may impact such third-party manufacturers' ability to obtain materials for manufacture or to continue ongoing operations under shelter-in-place orders. We and our third-party manufacturers do not know yet the full extent of potential impacts on our ability to conduct our operations, including manufacture of our product candidates, and so we and our manufacturers are continuing to monitor the situation closely. However, any failure by third parties that are manufacturing our product candidates, or components for such product candidates, to comply with cGMP or cGTP or failure to scale up manufacturing processes, including any failure to deliver sufficient quantities of such components or product candidates in a timely manner, including as a result of any disruption, delay, or closure resulting from the COVID-19 pandemic, 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 trials, refusal to approve pending applications or supplemental applications, detention of product, refusal to permit the import or export of products, injunction or imposing civil and criminal penalties.

***Our continued development of ProTmune may depend on third-party cell processing facilities for the manufacture of ProTmune under specific conditions. Any failure by these facilities to manufacture our product candidates consistently and under the proper conditions may result in delays to our clinical development plans and impair our ability to obtain approval for, or commercialize, these product candidates.***

Clinical cell processing facilities operated by or affiliated with our clinical sites have manufactured ProTmune for use in our clinical trials of ProTmune to date. We will be required by the FDA to standardize the manufacture of ProTmune, and any other product candidates we may develop, including our oversight for facility and raw material and vendor qualification through to final product analytical testing and release. The manufacture of ProTmune for use in registrational clinical trials and commercialization will be subject to the requirements of applicable regulatory authorities, including the FDA, and the anticipated manufacture of these product candidates for commercialization may require each of the clinical cell processing facilities at which ProTmune is manufactured to comply with cGMP and other regulatory requirements, and be subject to inspections by the FDA or other applicable regulatory authorities that would be conducted after the submission of a BLA or other marketing application. Although we are responsible for ensuring compliance with applicable regulatory requirements and for overseeing all aspects of product manufacture and release prior to applying for marketing approval, we do not control the activities of these third-party cell processing facilities and are completely dependent on their ability to comply with regulatory requirements and to properly execute the protocol for the manufacture of any of our product candidates. In particular, if the FDA requires each of the clinical cell processing facilities to comply with cGMP, there can be no guarantee that they will be able to do so. Because of these manufacturing requirements, if the applicable clinical cell processing facilities are unable to manufacture any of our product candidates, including ProTmune, in a manner that conforms to our specifications and the FDA's strict regulatory requirements, we may be required to identify alternative processes or facilities for the manufacture of such product candidate, which may require us to spend significant additional time and resources, and would impair our ability to manufacture, complete the clinical development of, and to commercialize, such product candidate. To comply with applicable regulatory and manufacturing requirements, the clinical cell processing facility may be required to possess or obtain certain equipment, including but not limited to biosafety cabinets, warming devices, cell washing devices, freezers or other materials, or to modify aspects of its operations, including its physical facility or layout, environmental systems, monitoring systems, quality systems or training procedures. If a clinical cell processing facility is unwilling or unable to comply with these regulatory or manufacturing requirements, it will be restricted or prohibited from manufacturing such product candidate and making it available for administration to patients. Any failure by these clinical cell processing facilities to properly manufacture ProTmune may adversely affect the safety and efficacy profile of such product candidate or cause the FDA or other regulatory authorities to impose restrictions or prohibitions on the manufacture and use of ProTmune in both the clinical and the commercial setting, which would have an adverse effect on our business.

***We depend on strategic partnerships and collaboration arrangements, such as our collaboration arrangements with Janssen and Ono, for the development and commercialization of certain of our product candidates in certain indications or geographic territories, and if these arrangements are unsuccessful, this could result in delays and other obstacles in the development, manufacture or commercialization of any of our product candidates and materially harm our results of operations.***

Our strategy for fully developing and commercializing our product candidates is dependent upon maintaining our current arrangements and establishing new arrangements with research collaborators, corporate collaborators and other third parties. We currently have corporate collaboration agreements with Janssen and Ono. These corporate collaboration agreements provide for, among other things, research funding and significant future payments should certain development, regulatory and commercial milestones be achieved. Under these arrangements, our corporate collaborators are typically responsible for:

- electing to advance product candidates through preclinical and into clinical development;
- conducting clinical development and obtaining required regulatory approvals for product candidates; and
- commercializing any resulting products.

As a result, we may not be able to conduct these corporate collaborations in the manner or on the time schedule we currently contemplate, which may negatively impact our business operations.

This lack of control over the research funding for, and the development and commercialization of, certain of our product candidates could cause delays or other difficulties in the development and commercialization of any of our product candidates, which may prevent completion of research and development activities and intended regulatory filings in a timely fashion, if at all. Because we expect to continue to rely on our current corporate collaborators and to enter into new collaborations in the future, the development and commercialization of any of our product candidates could be substantially delayed, and our ability to receive future funding could be substantially impaired if one or more of our current or future collaborators:

- shifts its priorities and resources away from our collaborations due to a change in business strategies, or a merger, acquisition, sale or downsizing of its company or business unit;
- ceases development in therapeutic areas which are the subject of our collaboration;
- fails to select a product candidate for advancement into preclinical development, clinical development, or subsequent clinical development into a marketed product;
- changes the success criteria for a particular product candidate, thereby delaying or ceasing development of such product candidate;
- significantly delays the initiation or conduct of certain activities which could delay our receipt of milestone payments tied to such activities, thereby impacting our ability to fund our own activities;
- develops a product candidate that competes, either directly or indirectly, with our product candidates;
- does not obtain the requisite regulatory approval of a product candidate;
- does not successfully commercialize a product candidate;
- encounters regulatory, resource or quality issues and be unable to meet demand requirements;
- exercises its rights under the agreement to terminate the collaboration, or otherwise withdraws support for, or otherwise impairs development under the collaboration;
- disagrees on the research, development or commercialization of a product candidate resulting in a delay in milestones, royalty payments or termination of such product candidate; and
- uses our proprietary information or intellectual property in such a way as to jeopardize our rights in such property.

In addition, the termination of the Janssen Agreement or the Ono Agreement or any future strategic partnership or collaboration arrangement that we enter into may prevent us from receiving any milestone, royalty payment, sharing of profits, and other benefits under such agreement. Furthermore, disagreements with these parties could require or result in litigation or arbitration, which would be time-consuming and expensive. Any of these events could have a material adverse effect on our ability to develop and commercialize any of our product candidates and may adversely impact our business, prospects, financial condition, and results of operations.

***Cell-based therapies depend on the availability of reagents and specialized materials and equipment which in each case are required to be acceptable to the FDA and foreign regulatory agencies, and such reagents, materials, and equipment may not be available to us on acceptable terms or at all. We rely on third-party suppliers for various components, materials and equipment required for the manufacture of our product candidates and do not have supply arrangements for certain of these components.***

Manufacturing our product candidates requires many reagents and other specialty materials and equipment, some of which are manufactured or supplied by small companies with limited resources and experience to support commercial biologics production. To date, we and our clinical cell processing facilities and CMOs have purchased equipment, materials and disposables, such as automated cell washing devices, automated cell warming units, commercially available media and cell transfer and wash sets, used for the manufacture of our existing product candidates from third-party suppliers. Some of these suppliers may not have the capacity to support commercial products manufactured under cGMP by biopharmaceutical firms or may otherwise be ill-equipped to support our needs. Reagents and other key materials from these suppliers may have inconsistent attributes and introduce variability into our manufactured product candidates, which may contribute to variable patient outcomes and possible adverse events. We rely on the general commercial availability of materials required for the manufacture of our product candidates, and do not have supply contracts with many of these suppliers and may not be able to obtain supply contracts with them on acceptable terms or at all. Even if we are able to enter into such contracts, we may be limited to a sole third-party for the supply of certain required components, including our pharmacologic modulators and components for our cell processing media. As a result of the COVID-19 pandemic, the business and operations of our suppliers may be disrupted or delayed, and we in turn may experience disruptions or delays in our supply chain. An inability to continue to source product from any of these suppliers, which could be due to the impacts of the COVID-19 pandemic, regulatory actions or requirements affecting the supplier, adverse financial or other strategic developments experienced by a supplier, labor disputes or shortages, unexpected demands, or quality issues, could adversely affect our ability to satisfy demand for our product candidates, which could adversely and materially affect our product sales and operating results or our ability to conduct clinical trials, either of which could significantly harm our business.

If we are required to change suppliers, or modify the components, equipment, materials or disposables used for the manufacture of our product candidates, we may be required to change our manufacturing operations or clinical trial protocols or to provide additional data to regulatory authorities in order to use any alternative components, equipment, materials or disposables, any of which could set back, delay, or increase the costs required to complete our clinical development and commercialization of our product candidates. Additionally, any such change or modification may adversely affect the safety, efficacy, stability, or potency of our product candidates, and could adversely affect our clinical development of our product candidates and harm our business.

***We face a variety of challenges and uncertainties associated with our dependence on human donor material for the manufacture of ProTmune.***

ProTmune is manufactured from the blood of third-party donors, and therefore, the manufacture of ProTmune is subject to the availability and quality of the third-party donor material. The selection of the appropriate donor material for manufacture of ProTmune requires close coordination between clinical and manufacturing personnel.

ProTmune is manufactured using mobilized peripheral blood (mPB), which is currently procured directly by the clinical cell processing facilities from the National Marrow Donor Program (NMDP) for our ongoing Phase 1/2 PROTECT clinical study. The availability of mPB for the manufacture of ProTmune depends on a number of regulatory, political, economic and technical factors outside of our control, including:

- government policies relating to the regulation of mPB for clinical use;
- NMDP and individual blood bank policies and practices relating to mPB acquisition and banking;
- the pricing of mPB;
- the methods used in searching for and matching mPB to patients, which involve emerging technology related to current and future mPB parameters that guide the selection of an appropriate unit of mPB for transplantation; and
- methods for the procurement and shipment of mPB and its handling and storage at clinical sites.

Additionally, we do not have control over the supply, availability, price or types of mPB that these clinical cell processing facilities use in the manufacture of ProTmune. We rely heavily, and expect to continue to rely heavily, on these third parties to procure mPB that is collected in compliance with government regulations and within the current standard of care. In addition, we may identify specific characteristics of specific units of mPB, such as the volume and red blood cell content, which may limit the ability to use such units in the manufacture of ProTmune even though this mPB may otherwise be suitable for use in allogeneic transplant. As a result, the requirement for mPB to meet our specifications may limit the potential inventory of mPB eligible for use in the manufacture of ProTmune for our ongoing and any future clinical trials and for commercial supplies of ProTmune, if approved.

In the United States, the banking and use of mPB does not require a BLA, and mPB is not an FDA licensed product. However, the FDA does require that units of mPB adhere to and meet the standards set forth by the Foundation for Accreditation for Cell Therapy (FACT), the NMDP, and the American Association of Blood Banks (AABB), as applicable. In our current Phase 1/2 PROTECT clinical trial of ProTmune, ProTmune is manufactured using unlicensed mPB units. It may be possible that in the future, regulatory policy could change, and the FDA may later require that mPB units be licensed, and that ProTmune be manufactured using only licensed mPB units. Any inability to procure sufficient supplies of mPB will adversely affect our ability to develop and commercialize ProTmune.

Further, manufacture of ProTmune from donor material involves complex processes, with specialized equipment and highly skilled and trained personnel. The processes for manufacturing ProTmune are 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. Such contaminations increase the risk of adverse side effects and may result in delays in the development of ProTmune.

***We currently rely on third parties to conduct certain research and development activities and clinical trials of our product candidates. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to timely develop, manufacture, obtain regulatory approval for or commercialize our product candidates and our business could be substantially harmed.***

We rely upon third parties, including medical institutions, clinical investigators, cell processing laboratories, and CROs for the conduct of certain research and preclinical development activities, process development and manufacturing activities, and for the conduct, management, and supervision of clinical trials of our product candidates. We do not have direct control over the activities of these third parties, and may have limited influence over their actual performance. Our reliance on these third parties and CROs does not relieve us of our responsibilities to ensure that our clinical studies are conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards.

We are responsible for complying, and we are responsible for ensuring that our third-party service providers and CROs comply, with applicable GCP for conducting activities for all of our product candidates in clinical development, including conducting our clinical trials, and recording and reporting data from these trials. Regulatory authorities enforce these regulations through periodic inspections of trial sponsors, principal investigators and trial sites. We cannot assure that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with applicable GCP requirements. In addition, our registrational clinical trials must be conducted with product produced under applicable regulatory requirements.

If these third parties and CROs do not successfully carry out their contractual duties or obligations, meet expected deadlines or successfully complete activities as planned, or if the quality or accuracy of the research, preclinical development, process development, manufacturing, or clinical data they obtain is compromised due to the failure to adhere to applicable regulatory and manufacturing requirements or for other reasons, our research, preclinical development, process development and manufacturing activities, and clinical trials, and the development of our product candidates, may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. Further, if our agreements with third parties or CROs are terminated for any reason, the development of our product candidates may be delayed or impaired, and we may be unable to advance our product candidates. As a result, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenues could be delayed.

***If conflicts arise between us and our collaborators or strategic partners, these parties may act in a manner adverse to us and could limit our ability to implement our strategies.***

If conflicts arise between our corporate or academic collaborators or strategic partners and us, the other party may act in a manner adverse to us and could limit our ability to implement our strategies. Some of our academic collaborators and strategic partners are conducting multiple product development efforts within each area that is the subject of the collaboration with us. Our collaborators or strategic partners, however, may develop, either alone or with others, products in related fields that are competitive with the products or potential products that are the subject of these collaborations. Competing products, either developed by the collaborators or strategic partners or to which the collaborators or strategic partners have rights, may result in the withdrawal of our collaborator’s or partner’s support for our product candidates.

Some of our collaborators or strategic partners could also become our competitors in the future. Our collaborators or strategic partners could develop competing products, preclude us from entering into collaborations with their competitors, fail to obtain timely regulatory approvals, terminate their agreements with us prematurely, or fail to devote sufficient resources to the development and commercialization of our product candidates. Any of these developments could harm our product development efforts.

**Risks Related to Our Intellectual Property**

***If we are unable to protect our intellectual property, or obtain and maintain patent protection for our technology and product candidates, other companies could develop products based on our discoveries, which may reduce demand for our products and harm our business.***

Our commercial success will depend in part on our ability to obtain and maintain intellectual property protection for our product candidates, the operations used to manufacture them and the methods for using them, and also for our cell programming technology in order to prevent third parties from making, using, selling, offering to sell or importing our product candidates or otherwise exploiting our cell programming approach. The scope of patent protection in the biotechnology and pharmaceutical field involves complex legal and scientific questions and can be uncertain. One aspect of the determination of patentability of our inventions depends on the scope and content of the "prior art," information that was or is deemed available to a person of skill in the relevant art prior to the priority date of the claimed invention. There may be prior art of which we are not aware that may affect the patentability of our patent claims or, if issued, affect the validity or enforceability of a patent claim. Further, we may not be aware of all third-party intellectual property rights potentially relating to our product candidates or their intended uses, and as a result the impact of such third-party intellectual property rights upon the patentability of our own patents and patent applications, as well as the impact of such third-party intellectual property upon our freedom to operate, is highly uncertain. Because patent applications in the United States and most other countries are confidential for typically a period of 18 months after filing, or may not be published at all, we cannot be certain that we were the first to file any patent application related to our product candidates. As a result, the issuance, scope, validity, enforceability, and commercial value of our patent rights are uncertain. We own and have exclusive licenses to patent portfolios for our product candidates and cell programming technology, although we cannot be certain that our existing patents and patent applications provide adequate protection or that any additional patents will issue to us with claims that provide adequate protection of our other product candidates. Further, we cannot predict the breadth of claims that may be enforced in our patents if we attempt to enforce them or if they are challenged in court or in other proceedings. If we are unable to secure and maintain protection for our product candidates and cell programming technology, or if any patents we obtain or license are deemed invalid and unenforceable, our ability to commercialize or license our technology could be adversely affected.

Others have filed, and in the future are likely to file, patent applications covering products and technologies that are similar, identical or competitive to ours or important to our business. Since patent applications in the United States and most other countries are confidential for a period of time after filing, and some remain so until issued, we cannot be certain that any patent application owned by a third party will not have priority over patent applications filed or in-licensed by us, or that we or our licensors will not be involved in interference, opposition, reexamination, review, reissue, post grant review or invalidity proceedings before U.S. or non-U.S. patent offices. The scope, validity or enforceability of our patents or the patents of our licensors may be challenged in such proceedings in either the courts or patent offices in the United States and abroad, and our business may be harmed if the coverage of our patents or the patents of our licensors is narrowed, or if a patent of ours or our licensors is judged invalid or unenforceable, in any such proceedings.

***We depend on our licensors to prosecute and maintain patents and patent applications that are material to our business. Any failure by our licensors to effectively protect these intellectual property rights could adversely affect our business and operations.***

Certain rights to our key technologies and product candidates, including intellectual property relating to ProTmune and our iPSC technology are licensed from third parties. As a licensee of third-party intellectual property, we rely on our licensors to file and prosecute patent applications and maintain patents, and otherwise protect the licensed intellectual property under some of our license agreements. We have not had and do not have primary control over these activities for certain of our licensed patents, patent applications and other intellectual property rights, and we cannot be certain that such activities will result in valid and enforceable patents and other intellectual property rights. Additionally, our licensors may have the right to control enforcement of our licensed patents or defense of any claims asserting the invalidity of these patents and we cannot be certain that our licensors will allocate sufficient resources or prioritize enforcement of such patents or defense of such claims to protect our interests in the licensed patents. Even if we are not a party to these legal actions, an adverse outcome could harm our business because it might prevent us from continuing to license intellectual property that we may need to operate our business.

***If we fail to comply with our obligations under our license agreements, we could lose rights to our product candidates or key technologies.***

We have obtained rights to develop, market and sell some of our product candidates through intellectual property license agreements with third parties. These license agreements impose various diligence, milestone payment, royalty and other obligations on us. In particular, under our Amended and Restated Exclusive License Agreement dated May 15, 2018 (the Amended MSK License) with Memorial Sloan Kettering Cancer Center (MSK), in the event a licensed product achieves a specified clinical milestone, MSK is eligible to receive from us certain milestone payments totaling up to $75.0 million based on the price of our common stock, where the amount of such payments owed to MSK is contingent upon certain increases in the price of our common stock following the date of

achievement of such clinical milestone. If we fail to comply with our obligations under our license agreements, including any payment obligations, we could lose some or all of our rights to develop, market and sell products covered by these licenses, and our ability to form collaborations or partnerships may be impaired. In addition, disputes may arise under our license agreements with third parties, which could prevent or impair our ability to maintain our current licensing arrangements on acceptable terms and to develop and commercialize the affected product candidates.

***We may be involved in litigation or other proceedings relating to the enforcement or defense of patent and other intellectual property rights, which could cause us to divert our resources and could put our intellectual property at risk.***

If we choose to go to court to stop another party from using the inventions claimed in any patents we obtain, that individual or company has the right to ask the court to rule that such patents are invalid or should not be enforced against that third party. In addition to patent infringement lawsuits, we may be required to file interferences, oppositions, *ex parte* reexaminations, post-grant review, or *inter partes* review proceedings before the U.S. Patent and Trademark Office (the USPTO) and corresponding foreign patent offices. Litigation and other proceedings relating to intellectual property are unpredictable and expensive, and would consume time and resources and divert the attention of managerial and scientific personnel even if we were successful in any such proceeding. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for research, development, and other activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings or may be required to divert such resources from our ongoing and planned research and development activities. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing or misappropriating or successfully challenging our intellectual property rights. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

There also is a risk that a court or patent office in such proceeding will decide that our patents or the patents of our licensors are not valid or are not enforceable, and that we do not have the right to stop the other party from using the inventions. There is also the risk that, even if the validity of such patents is upheld, the court will refuse to stop the other party on the ground that such other party's activities do not infringe our rights to such patents. If we were not successful in defending our intellectual property, our competitors could develop and market products based on our discoveries, which may reduce demand for our products.

***We or our strategic partners may infringe the intellectual property rights of others, which may prevent or delay our product development efforts and stop us from commercializing, or increase the costs of commercializing, our product candidates.***

Our success will depend, in part, on our ability to operate without infringing the proprietary rights of third parties. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions, *ex part*e reexaminations, post-grant review, and *inter partes* review proceedings before the USPTO and corresponding foreign patent offices. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing 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 the patent rights of third parties.

We cannot be certain that any of our patent searches or analyses, including the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States and abroad that is relevant to or necessary for the commercialization of our product candidates in any jurisdiction. The scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. We may incorrectly determine that our products are not covered by a third-party patent or may incorrectly predict whether a third-party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our products.

We cannot guarantee that the manufacture, use or marketing of our existing product candidates or any other product candidates that we develop, or the use of our cell programming technology, will not infringe third-party patents. There may be third-party patents or patent applications with claims to materials, cell compositions, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. Our competitors may have filed, and may in the future file, patent applications covering products and technologies similar to ours. Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents.

Third parties asserting their patent or other intellectual property rights against us may seek and obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize our product candidates or force us to cease some of our business operations. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and other employee resources from our business, cause development delays, and may impact our reputation. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties, or redesign our infringing products, which may be impossible on a cost-effective basis or require substantial time and monetary expenditure. In that event, we would be unable to further develop and commercialize our product candidates, which could harm our business significantly. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

***We may not be successful in obtaining or maintaining necessary rights to product components and processes for development or manufacture of our product candidates which may cause us to operate our business in a more costly or otherwise adverse manner that was not anticipated.***

We own or license from third parties certain intellectual property rights necessary to develop and manufacture our product candidates. The growth of our business will likely depend in part on our ability to acquire or in-license additional proprietary rights, including to advance our research or allow commercialization of our product candidates. In that event, we may be required to expend considerable time and resources to develop or license replacement technology. For example, our programs may involve additional technologies or product candidates that may require the use of additional proprietary rights held by third parties. Furthermore, other pharmaceutical or biotechnology companies and academic institutions may also have filed or are planning to file patent applications potentially relevant to our business. From time to time, in order to avoid infringing these third-party patents, we may be required to license technology from additional third parties to further develop or commercialize our product candidates. We may be unable to acquire or in-license any relevant third-party intellectual property rights, including any such intellectual property rights required to manufacture, use or sell our product candidates, that we identify as necessary or important to our business operations. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all, and as a result we may be unable to develop or commercialize the affected product candidates, which would harm our business. We may need to cease use of the compositions or methods covered by such third-party intellectual property rights, and may need to seek to develop alternative approaches that do not infringe on such intellectual property rights which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible. Even if we are able to obtain a license under such intellectual property rights, any such license may be non-exclusive, which may allow our competitors' access to the same technologies licensed to us.

Additionally, we sometimes collaborate with academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us. If we are unable to do so, the institution may offer the intellectual property rights to other parties, potentially blocking our ability to pursue our program. If we are unable to successfully obtain rights to required third-party intellectual property or to maintain the existing intellectual property rights we have, we may have to abandon development of such program and our business and financial condition could suffer.

The licensing and acquisition of third-party intellectual property rights is a competitive practice, and companies that may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their larger size and cash resources or greater clinical development and commercialization capabilities. In addition, it may be more costly for us to secure and maintain the necessary patent protection to block third parties from using our technology than to negotiate out-licenses or similar agreements with these parties to provide them with limited rights to use our technology. There can be no assurance that we will be able to successfully complete any such negotiations and ultimately acquire or maintain, on commercially viable terms, the rights to the intellectual property required for the successful development and commercialization of our product candidates.

***Intellectual property rights do not necessarily address all potential threats to our competitive advantage.***

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

- others may be able to make product candidates that are similar to ours but that are not covered by the claims of the patents that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patent or pending patent application that we own or have exclusively licensed;

- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our pending patent applications will not lead to issued patents;
- issued patents that we own or have exclusively licensed may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- we cannot predict the scope of protection of any patent issuing based on our patent applications, including whether the patent applications that we own or in-license will result in issued patents with claims that cover our product candidates or uses thereof in the United States or in other foreign countries;
- the claims of any patent issuing based on our patent applications may not provide protection against competitors or any competitive advantages, or may be challenged by third parties;
- if enforced, a court may not hold that our patents are valid, enforceable and infringed;
- we may need to initiate litigation or administrative proceedings to enforce and/or defend our patent rights which will be costly whether we win or lose;
- we may choose not to file a patent in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property;
- we may fail to adequately protect and police our trademarks and trade secrets; and
- the patents of others may have an adverse effect on our business, including if others obtain patents claiming subject matter similar to or improving that covered by our patents and patent applications.

Should any of these events occur, they could significantly harm our business, results of operations and prospects.

***We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed alleged trade secrets.***

In conducting our business operations, we have obtained confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants and independent contractors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers or other parties. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we could lose valuable intellectual property rights or personnel, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

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

We may be subject to claims that former employees, collaborators, or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. If we fail in defending any such claims, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. We may also be subject to monetary damages, and any of these outcomes could have a material adverse impact on our business.

***Proprietary information and invention assignment agreements with our employees and third parties may not prevent unauthorized disclosure of our trade secrets and other proprietary information.***

In addition to the protection afforded by patents, we also rely upon unpatented trade secrets and improvements, proprietary know-how, and continuing technological innovation to develop and maintain our competitive position, which we seek to protect, in part, through confidentiality agreements with our collaborators, employees and consultants. We also have invention or patent assignment agreements with our employees and some, but not all, of our collaborators and consultants. Because we expect to rely on third parties in the development and manufacture of our product candidates, we must, at times, share trade secrets with them, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Trade secrets, however, may be difficult to protect, and any disclosure, either intentional or unintentional, by our employees or third-party consultants and vendors that we engage to perform research, clinical trials or manufacturing activities, or misappropriation by third parties (such as through a cybersecurity breach) of our trade secrets or proprietary information could enable competitors to duplicate or surpass our technological achievements, thus eroding our competitive position in our market. Although we use reasonable efforts to protect our trade secrets, our employees, consultants, outside scientific advisors, contractors, and collaborators might intentionally or inadvertently disclose our trade secret information to competitors. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor or other third-party, we would have no right to prevent them from using that technology or information to compete with us. Furthermore, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, or misappropriation of our intellectual property by third parties, we will not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results, and financial condition.

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

Filing, prosecuting and defending patents on our product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and may also export infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with any products that we may develop and commercialize, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

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

***Changes in the patent law in the United States could diminish the value of patents in general, thereby impairing our ability to protect our product candidates and technology.***

As is the case with other biotechnology companies, our success is heavily dependent on intellectual property rights, particularly patents. Obtaining and enforcing patents in the biotechnology industry involve both technological and legal complexity, and is therefore obtaining and enforcing biotechnology patents is costly, time-consuming and inherently uncertain. In addition, the United States has recently enacted and is currently implementing wide-ranging patent reform legislation. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has

created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

***The term of our patents may not be sufficient to effectively protect our market position and products.***

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available; however, the life of a patent, and the protection it affords, is limited. Even if we obtain patents covering our product candidates, once the patent life has expired for a product, we may be open to competition from other products. If the lives of our patents are not sufficient to effectively protect our products and business, our business and results of operations will be adversely affected.

**Risks Related to the Commercialization of Our Product Candidates**

***We do not have experience marketing any product candidates and do not have a sales force or distribution capabilities, and if our products are approved we may be unable to commercialize them successfully.***

We currently have no experience in marketing and selling therapeutic products. If any of our product candidates are approved for marketing, we intend to establish marketing and sales capabilities internally or we may selectively seek to enter into partnerships with other entities to utilize their marketing and distribution capabilities. If we are unable to develop adequate marketing and sales capabilities on our own or effectively partner with third parties, our ability to generate product revenues will suffer.

***The commercial success of our product candidates will depend upon the degree of market acceptance by physicians, patients, third-party payers and others in the medical community.***

The commercial success of our products, if approved for marketing, will depend in part on the medical community, patients and third-party payers accepting our product candidates as effective and safe. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenue and may not become profitable. The degree of market acceptance of our products, if approved for marketing, will depend on a number of factors, including:

- the safety and efficacy of the products, and advantages over alternative treatments;
- the labeling of any approved product;
- the prevalence and severity of any side effects, including any limitations or warnings contained in a product's approved labeling;
- the emergence, and timing of market introduction, of competitive products;
- the effectiveness of our marketing strategy; and
- sufficient third-party insurance coverage or governmental reimbursement, which may depend on our ability to provide compelling evidence that a product meaningfully improves health outcomes to support such insurance coverage or reimbursement.

Even if a potential product displays a favorable efficacy and safety profile in preclinical studies and clinical trials, market acceptance of the product will not be known until after it is launched. Any failure to achieve market acceptance for our product candidates will harm our business, results and financial condition.

***We expect to face uncertainty regarding the pricing of our existing product candidates and any other product candidates that we may develop. If pricing policies for our product candidates are unfavorable, our commercial success will be impaired.***

Due to the novel nature of our product candidates, and the targeted indication of HSCT procedures in general and our cellular immunotherapy product candidates in particular, we face significant uncertainty as to the pricing of any such products for which we may receive marketing approval. While we anticipate that pricing for any cellular immunotherapy product candidates that we develop will be relatively high due to their anticipated use in the prevention or treatment of life-threatening diseases where therapeutic options are limited, the biopharmaceutical industry has recently experienced significant pricing pressures, including in the area of orphan drug products. In particular, drug pricing and other healthcare costs continue to be subject to intense political and societal pressures, which we anticipate will continue and escalate on a global basis. These pressures may result in harm to our business and reputation, cause our stock price to decline or experience periods of volatility and adversely affect results of operations and our ability to raise funds.

***The insurance coverage and reimbursement status of newly-approved products is uncertain. Failure to obtain or maintain adequate coverage and reimbursement for new products could limit our product revenues.***

Our ability to commercialize any of our product candidates successfully will depend in part on the extent to which reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers, and other organizations. In the United States, the principal decisions about reimbursement for new medicines are typically made by CMS, an agency within the U.S. Department of Health and Human Services. CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare, and private payors tend to follow CMS determinations to a substantial degree. The availability and extent of reimbursement by governmental and private payers is essential for most patients to be able to afford expensive treatments, such as HSCT or cellular immunotherapy. There is significant uncertainty related to the insurance coverage and reimbursement of newly approved products by government and third-party payers. In particular, there is no body of established practices and precedents for reimbursement of cellular immunotherapies, and it is difficult to predict what the regulatory authority or private payer will decide with respect to reimbursement levels for novel products such as ours. Our products may not qualify for coverage or direct reimbursement, or may be subject to limited reimbursement. If reimbursement or insurance coverage is not available, or is available only to limited levels, we may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be sufficient to allow us to establish or maintain pricing to generate income.

In addition, reimbursement agencies in foreign jurisdictions may be more conservative than those in the United States. Accordingly, in markets outside the United States, the reimbursement for our products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenues and profits. Moreover, increasing efforts by governmental and third-party payers, in the United States and abroad, to cap or reduce healthcare costs may cause such organizations to limit both coverage and level of reimbursement for new products approved and, as a result, they may not cover or provide adequate payment for our product candidates. Failure to obtain or maintain adequate reimbursement for any products for which we receive marketing approval will adversely affect our ability to achieve commercial success, and could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products, and our overall financial condition.

***If the market opportunities for our product candidates are smaller than we believe they are, our revenues may be adversely affected and our business may suffer. Because the target patient populations of our product candidates are small, we must be able to successfully identify patients and capture a significant market share to achieve and maintain profitability.***

We focus our research and development on product candidates for orphan indications and other rare diseases. Our projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with our product candidates, are based on estimates. These estimates may prove to be incorrect, and new studies may change the estimated incidence or prevalence of these diseases. The number of patients in the United States, Europe and elsewhere may turn out to be lower than expected or may not be otherwise amenable to treatment with our products, or new patients may become increasingly difficult to identify or gain access to, all of which would adversely affect our results of operations and our business. Additionally, because our target patient populations are small, we will be required to capture a significant market share to achieve and maintain profitability.

***Healthcare legislative or regulatory reform measures may have a negative impact on our business and results of operations.***

In the United States and some foreign jurisdictions, there have been, and continue to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of product candidates, restrict or regulate post-approval activities, and affect our ability to profitably sell any product candidates for which we obtain marketing approval.

Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. In March 2010, the Affordable Care Act (ACA) was passed, which substantially changed the way healthcare is financed by both the government and private insurers, and significantly impacts the U.S. pharmaceutical industry. Since its enactment, there have been many judicial, executive, and Congressional challenges to numerous aspects of the ACA. For example, various portions of the ACA are currently undergoing legal and constitutional challenges in the United States Supreme Court, who is expected to rule on the constitutionality of the ACA in early 2021. Additionally, the previous administration issued various Executive Orders that eliminated cost sharing subsidies and various provisions that would impose a fiscal burden on states or a cost, fee, tax, penalty or regulatory burden on individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices; and Congress has introduced several pieces of legislation aimed at significantly revising or repealing the ACA. As a result, the full impact on our business of the ACA, the potential impacts of any challenges including any laws repealing and/or replacing elements of it, as well as the political uncertainty surrounding any repeal or replacement legislation, remain unclear, particularly given potential actions taken under the Biden administration and the pending Supreme Court decision.

In July 2018, CMS published a final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program. At the state level, legislatures are increasingly passing legislation and implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. The full impact of these federal and state laws and regulations, as well as other new laws and reform measures that may be proposed and adopted in the future, remains uncertain, but may result in additional reductions in Medicare and other healthcare funding, which could have an adverse effect on customers for our product candidates, if approved, and, accordingly, our financial operations.

Additionally, there has been heightened governmental scrutiny in the United States of pharmaceutical and biologics pricing practices in light of the rising cost of prescription drugs and biologics. Such scrutiny has resulted in various congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for products.

We expect that these and other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved drug. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our drugs.

In addition, FDA regulations and guidance may be revised or reinterpreted by the FDA in ways that may significantly affect our business and our products. Any new regulations or guidance, or revisions or reinterpretations of existing regulations or guidance, may impose additional costs or lengthen FDA review times for our existing product candidates or any future product candidates we may develop. We cannot determine how changes in regulations, statutes, policies, or interpretations when and if issued, enacted or adopted, may affect our business in the future. Such changes could, among other things, require:

- additional non-clinical or clinical trials to be conducted prior to obtaining approval;
- changes to manufacturing methods;
- recalls, replacements, or discontinuance of one or more of our products; and
- additional recordkeeping.

Such changes would likely require substantial time and impose significant costs, or could reduce the potential commercial value of our existing product candidates or other product candidates we may develop, and could materially harm our business and our financial results. In addition, delays in receipt of or failure to receive regulatory clearances or approvals for any other products would harm our business, prospects, financial condition, and results of operations.

**Risks Related to Our Business and Industry**

***The success of our existing product candidates is substantially dependent on developments within the field of HSCT and cellular immunotherapy, some of which are beyond our control.***

Our product candidates are designed and are being developed as therapeutic entities for use as cellular immunotherapies. Any adverse developments in the field of cellular immunotherapy generally, and in the practice of HSCT in particular, will negatively affect our ability to develop and commercialize our product candidates. If the market for HSCT procedures declines or fails to grow at anticipated levels for any reason, or if the need for patients to undergo HSCT procedures is obviated due to the development and commercialization of therapeutics targeting the underlying cause of diseases addressed by HSCT, our business prospects will be significantly harmed.

***We face competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.***

The biotechnology and pharmaceutical industries are intensely competitive and subject to rapid and significant technological change. We face competition from biotechnology and pharmaceutical companies, universities, and other research institutions, and many of our competitors have greater financial and other resources, such as larger research and development staff and more experienced marketing and manufacturing organizations and facilities. In particular, there are several companies and institutions developing products that may obviate the need for HSCT, may be competitive to our iPSC-derived product candidates or candidates in our research and development pipeline, or may render our product candidates obsolete or noncompetitive. Should one or more of these products be successful, the market for our products may be reduced or eliminated, and we may not achieve commercial success.

***We may not be able to manage our business effectively if we are unable to attract and retain key personnel and consultants.***

We may not be able to retain or attract qualified management, finance, scientific and clinical personnel and consultants due to the intense competition for qualified personnel and consultants among biotechnology, pharmaceutical and other businesses. If we are not able to retain and attract necessary personnel and consultants to perform the requisite operational roles and accomplish our business objectives, we may experience constraints that will significantly impede the achievement of our development objectives, our ability to raise additional capital and our ability to implement our business strategy.

***We expect to continue to expand our development and manufacturing operations, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.***

We are experiencing rapid growth and as of December 31, 2020, we had 279 employees. We expect continued growth in the number of our employees and the scope of our operations, particularly to continue our clinical and research operations, and to expand our regulatory, quality, and manufacturing operations. Our rapid growth imposes significant added responsibilities on members of management, including: identifying, recruiting, integrating, maintaining, and motivating additional employees; managing our internal development efforts effectively, including the clinical and FDA review process for our product candidates, while complying with our contractual obligations to contractors and other third parties; and improving our operational, financial and management controls, reporting systems, and procedures.

To manage our anticipated future growth, we will continue to implement and improve our managerial, operational, and financial systems, expand our facilities, and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the complexity in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

***The global COVID-19 pandemic could adversely impact various aspects of our business, results of operations and financial condition.***

As a result of the COVID-19 pandemic, various aspects of our business operations have been, and could continue to be, disrupted. In response to the pandemic, we have implemented a work from home policy, with our administrative employees continuing their work outside of our offices, and imposed onsite occupancy limits, restricting on-site staff to only those required to execute certain laboratory, manufacturing and related support activities, and requiring self-health testing prior to coming onsite. The increase in working remotely could increase our cybersecurity risk, create data accessibility concerns, and make us more susceptible to communication disruptions, any of which could adversely impact our business operations or delay necessary interactions with local and federal regulators, ethics committees, manufacturing sites, and clinical trial sites. In addition, as a result of shelter-in-place orders or other mandated travel restrictions, our on-site staff conducting research and development, preclinical studies, and manufacturing activities may not be able to access our laboratories or manufacturing space, and these core activities may be significantly limited or curtailed, possibly for an extended period of time, which could impair our ability to complete IND-enabling studies or select future development candidates. Our business operations may be further disrupted if any of our employees, officers or directors, or their respective personal or business contacts, contract an illness related to COVID-19 and render them unable to perform their duties as a result.

In addition, the trading prices for our common stock and other biopharmaceutical companies have been highly volatile as a result of the COVID-19 pandemic. As a result, we may face difficulties raising capital through equity or debt financings, or such financing transactions may be on unfavorable terms. While the potential economic impact brought by and the duration of the pandemic may be difficult to assess or predict, it has already caused, and is likely to result in further, significant disruptions and uncertainties in global financial markets, which may reduce our ability to access capital either at all or on favorable terms. In addition, a recession, depression or other sustained adverse market event resulting from the spread of COVID-19 could materially and adversely affect our business and the value of our common stock.

The ultimate impact of the current pandemic, or any other health epidemic, is highly uncertain and subject to change. We do not yet know the full extent of potential delays or impacts on our business, our clinical and preclinical programs, our research, manufacturing, and regulatory activities, healthcare systems or the global economy as a whole. However, these effects could have a material adverse impact on our operations, and we will continue to monitor the situation closely.

***If we engage in an acquisition, reorganization or business combination, we will incur a variety of risks that could adversely affect our business operations or our stockholders.***

From time to time, we have considered, and we will consider in the future, strategic business initiatives intended to further the expansion and development of our business. These initiatives may include acquiring businesses, technologies or products or entering into business combinations with other companies. If we pursue such a strategy, we could, among other things:

- issue equity securities that would dilute our current stockholders' percentage ownership;
- incur substantial debt that may place strains on our operations;
- spend substantial operational, financial and management resources to integrate new businesses, technologies and products;
- assume substantial actual or contingent liabilities;
- reprioritize our development programs and even cease development and commercialization of our product candidates; or
- merge with, or otherwise enter into a business combination with, another company in which our stockholders would receive cash or shares of the other company on terms that certain of our stockholders may not deem desirable.

Although we intend to evaluate and consider acquisitions, reorganizations and business combinations in the future, we have no agreements or understandings with respect to any acquisition, reorganization or business combination at this time.

***We face potential product liability exposure far in excess of our limited insurance coverage.***

The use of our product candidates in clinical trials, and the sale of any products for which we obtain marketing approval, exposes us to the risk of product liability claims. Product liability claims might be brought against us by participants in clinical trials, hospitals, medical centers, healthcare providers, pharmaceutical companies, and consumers, or by others selling, manufacturing or otherwise coming into contact with our product candidates. We carry product liability insurance and we believe our product liability insurance coverage is sufficient in light of our current clinical programs. In addition, if and when we obtain marketing approval for product candidates, we intend to expand our insurance coverage to include the sale of commercial products; however, we may be unable to obtain insurance coverage for any approved products on commercially reasonable terms or in sufficient amounts to protect us against losses due to liability.

On occasion, large judgments have been awarded in class action lawsuits based on drugs or medical treatments that had unanticipated adverse effects. In addition, under some of our agreements with clinical trial sites, we are required to indemnify the sites and their personnel against product liability and other claims. A successful product liability claim, or a series of claims, brought against us or any third parties whom we are required to indemnify could cause our stock price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business.

Patients with the diseases targeted by our product candidates are often already in severe and advanced stages of disease and have both known and unknown significant pre-existing and potentially life-threatening health risks. During the course of treatment, patients may suffer adverse events, including death, for a variety of reasons. Such events, whether or not resulting from our product candidates, could subject us to costly litigation, require us to pay substantial amounts of money to injured patients, delay, negatively affect or end our opportunity to receive or maintain regulatory approval to market our products, or require us to suspend or abandon our commercialization efforts. Even in a circumstance in which we do not believe that an adverse event is related to our products, the investigation into the circumstance may be time-consuming or inconclusive. These investigations may interrupt our development and commercialization efforts, delay our regulatory approval process, or impact and limit the type of regulatory approvals our product candidates receive or maintain. As a result of these factors, a product liability claim, even if successfully defended, could have a material adverse effect on our business, financial condition or results of operations.

***Our employees may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements and insider trading.***

We are exposed to the risk of employee fraud or other misconduct. Misconduct by employees could include intentional failures to comply with the regulations of the FDA or foreign regulators, to provide accurate information to the FDA or foreign regulators, to comply with healthcare fraud and abuse laws and regulations in the United States and abroad, to report financial information or data accurately or to disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. Employee and independent contractor misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and cause serious harm to our reputation. If any actions alleging such conduct are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant effect on our business, including the imposition of significant fines or other sanctions.

***We face risks of potential liability related to the privacy of personal information, including health information we utilize in the development of our products, as well as information we obtain from clinical trials sponsored by us from research institutions and directly from individuals.***

We and our partners and vendors may be subject to various federal, state, and foreign data protection laws and regulations (i.e., laws and regulations that address privacy and data security). In the United States, numerous federal and state laws and regulations, including federal health information privacy laws, state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act), that govern the collection, use, disclosure and protection of health-related and other personal information could apply to our operations or the operations of our collaborators, including the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) and privacy and security requirements under HIPAA, as amended by Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH). Depending on the facts and circumstances, we could be subject to civil, criminal, and administrative penalties if we knowingly obtain, use, or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA. There is no certainty that all of our employees, agents, suppliers, manufacturers, contractors, or collaborators, or those of our affiliates, will comply with all applicable laws and regulations, particularly given the high level of complexity of these laws. Even when HIPAA does not apply, failing to take appropriate steps to keep consumers' personal information secure may constitute a violation of the Federal Trade Commission Act. In addition, certain of the materials we use as starting material in our iPSC-derived product candidates are derived from human sources, which potentially contain sensitive identifiable personal information regarding the donor. In addition, in conducting our clinical trials, we may maintain sensitive identifiable personal information, including health information, that we receive throughout the clinical trial process, in the course of our research collaborations, and directly from individuals (or their healthcare providers) who enroll in our clinical trials. As such, we may become subject to further obligations under HIPAA. Our collection of personal information generally (e.g., of employees currently and/or of patients in the future) may subject us to state data privacy laws governing the processing of personal information and requiring notification of affected individuals and state regulators in the event of a breach of such personal information. These state laws include the California Consumer Privacy Act (CCPA) and its related regulations, and (once effective) the recently approved California Privacy Rights Act (CPRA) amending the CCPA, which establish additional data privacy rights for residents of the State of California, with corresponding obligations on businesses related to transparency, deletion rights, and opt-out of the selling of personal information, and grants a private right of action for individuals in the event of certain security breaches. Similar laws relating to data privacy and security have been proposed in other states and at the federal level, and if passed, such laws may have potentially conflicting requirements that would make compliance challenging, require us to expend significant resources to come into compliance, and restrict our ability to process certain personal information.

Certain state laws may be more stringent or broader in scope than the CPRA, or offer greater individual rights, with respect to confidential, sensitive and personal information than federal, international or other state laws, and such laws may differ from each other, which may complicate compliance efforts.

We are likely to be required to expend significant capital and other resources to ensure ongoing compliance with applicable data privacy and security laws. Claims that we have violated individuals' privacy rights or breached our contractual obligations, even if we are not found liable, could be expensive and time-consuming to defend, and could result in adverse publicity that could harm our business. Moreover, even if we take all necessary action to comply with legal and regulatory requirements, we could be subject to a data breach or other unauthorized access of personal information, which could subject us to fines and penalties, as well as litigation and reputational damage. If we fail to keep apprised of and comply with applicable international, federal, state, or local regulatory requirements, we could be subject to a range of regulatory actions that could affect our or any collaborators' ability to seek to commercialize our clinical candidates. Any threatened or actual government enforcement action or litigation where private rights of action are available could also generate adverse publicity, damage our reputation, result in liabilities, fines and loss of business, and require that we devote substantial resources that could otherwise be used in other aspects of our business.

***Our internal computer systems, or those used by our third-party research institution collaborators, CROs or other contractors or consultants, may fail or suffer security breaches.***

Despite the implementation of security measures, our internal computer systems and those of our future CROs and other contractors, vendors, and consultants may be vulnerable to damage from computer viruses and unauthorized access. In addition, these vulnerabilities may be heightened as a result of remote work policies implemented by us and our third-party contractors in response to the COVID-19 pandemic. We have from time to time experienced, and may continue to experience in the future, cyber-attacks on our information technology systems despite our best efforts to prevent them. Although such breaches have been immaterial to our business to date, investigations into and remedial efforts in connection with any breaches, even those with immaterial impact, can be costly and time-consuming, and any future breaches could be material, or cause significant disruption, to our business. For example, the loss of clinical trial data from completed, ongoing or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Likewise, we rely on third parties for research and development, the manufacture and supply of drug product and drug substance and to conduct clinical trials, and similar events relating to their computer

systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or systems, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our product candidates could be delayed.

Certain data breaches must also be reported to affected individuals and the government, and in some cases to the media, under provisions of HIPAA, as amended by HITECH, other U.S. federal and state law, and requirements of non-U.S. jurisdictions, including the European Union Data Protection Directive, and financial penalties may also apply.

Our insurance policies may not be adequate to compensate us for the potential losses arising from breaches, failures or disruptions of our infrastructure, catastrophic events and disasters or otherwise. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all. Further, our insurance may not cover all claims made against us and defending a suit, regardless of its merit, could be costly and divert management's attention.

Furthermore, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data.

**Risks Related to Our Financial Condition and the Ownership of Our Common Stock**

***Our ongoing and planned operations, including the development of our product candidates, will require substantial additional funding, without which we will be unable to complete preclinical or clinical development of, or obtain regulatory approval for, our product candidates.***

We are currently advancing multiple product candidates through clinical development, and conducting preclinical research and development activities in our other programs. Drug development is expensive, and we expect our research and development expenses to increase substantially in connection with our ongoing activities, particularly as we advance our current product candidates in clinical trials and seek to initiate clinical development for additional product candidates.

As of December 31, 2020, our cash and cash equivalents and investments were $482.9 million. We intend to use our cash and cash equivalents and investments primarily to fund the advancement and clinical development of our current product candidates and our ongoing preclinical, discovery and research programs, and for working capital and general corporate purposes. However, our operating plan may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic and licensing arrangements or a combination of these approaches. In any event, we will require additional capital to obtain regulatory approval for, and to commercialize our existing product candidates and any other product candidates we may identify and develop. Even if we believe we have sufficient funds for our current or future operating plans, we may seek additional capital if market conditions are favorable or if we have specific strategic considerations. Our future capital requirements will depend on many factors, including, but not limited to:

- the progress, results, size, timing and costs of our ongoing and planned clinical trials, and any additional clinical trials we may initiate, conduct or support for our product candidates;
- the progress, results, size, timing and costs of our preclinical, process development and manufacturing studies, and activities necessary to initiate and conduct clinical trials for our product candidates and to establish and maintain manufacturing capabilities necessary to support such trials;
- continued progress in our research and development programs, including preclinical studies, process development, manufacturing and other research activities that may be necessary in order for an IND application to go into effect for a prospective clinical development candidate, as well as potential future clinical trials of any additional product candidates we may identify for development;
- the extent to which we are required to pay milestone or other payments under our existing in-license agreements and any in-license agreements that we may enter into in the future, and the timing of such payments, including payments owed to Memorial Sloan-Kettering in connection with the stock price appreciation milestones;
- our ability and the ability of our investigators to initiate and conduct, and the progress, results, size, timing and costs of, clinical trials of our product candidates that will be necessary to support any application for regulatory approval;
- our ability to manufacture, or enter into arrangements with third parties for the manufacture of our existing product candidates, as well as potential future clinical development candidates, both for clinical development and commercialization, and the timing and costs associated with such manufacture;
- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, or other costs we may incur, in connection with the licensing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights;

- the cost of manufacturing, distribution, and commercialization activities and arrangements, including the manufacturing of our product candidates, establishment of effective protocols for the supply and transport of our product candidates, and the establishment of a sales and marketing organization either internally or in partnership with a third party; and
- our ability to establish and maintain strategic arrangements and alliances with third-party collaborators including our existing collaborations with Janssen Biotech, Inc., Ono Pharmaceutical Co., Ltd., the University of Minnesota, and Memorial Sloan Kettering, to advance the research, development and commercialization of therapeutic products.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. Moreover, the terms of any financing may adversely affect the holdings or the rights of our stockholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our shares to decline. The sale of additional equity or convertible securities would dilute all of our stockholders. The incurrence of indebtedness would result in increased fixed payment obligations and we may be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborative partners or otherwise at a different stage than otherwise would be desirable and we may be required to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects. In addition, while the overall impact of the COVID-19 pandemic on the global economy is currently unknown and difficult to predict, the pandemic has caused significant disruptions and created uncertainties in the global financial markets, and the economic impacts of the pandemic could materially and adversely affect our ability to raise capital through equity or debt financings in the future.

If we cannot raise additional capital or obtain adequate funds, we may be required to curtail significantly our research and clinical programs or may not be able to continue our research or clinical development of our product candidates. Our failure to raise additional capital, or obtain adequate funds, will have a material adverse effect on our business, prospects, financial condition, results of operations, and market price of shares of our common stock.

***We have a limited operating history, have incurred significant losses since our inception, and anticipate that we will continue to incur significant losses for the foreseeable future.***

We are a clinical-stage biopharmaceutical company formed in 2007 with a limited operating history. We have not yet obtained regulatory approval for any of our product candidates or generated any revenues from therapeutic product sales. Since inception, we have incurred significant net losses in each year and, as of December 31, 2020, we had an accumulated deficit of $556.9 million. We expect to continue to incur losses for the foreseeable future as we continue to fund our ongoing and planned clinical trials of our product candidates, and our other ongoing and planned research and development activities. We also expect to incur significant operating and capital expenditures as we continue our research and development of, and seek regulatory approval for, our product candidates, in-license or acquire new product candidates for development, implement additional infrastructure and internal systems, and hire additional scientific, clinical, and administrative personnel. We anticipate that our net losses for the next several years could be significant as we conduct our planned operations.

Because of the numerous risks and uncertainties associated with pharmaceutical, biological, and cell therapy product development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve profitability. In addition, our expenses could increase if we are required by the FDA, or comparable foreign regulatory authorities, to perform studies or trials in addition to those currently expected, or if there are any delays in completing our clinical trials, preclinical studies, process development, manufacturing activities, or the research and development of any of our product candidates. The amount of our future net losses will depend, in part, on the rate of increase in our expenses, our ability to generate revenues and our ability to raise additional capital. These net losses have had, and will continue to have, an adverse effect on our stockholders' equity and working capital.

***Our stock price is subject to fluctuation based on a variety of factors.***

The market price of shares of our common stock could be subject to wide fluctuations as a result of many risks listed in this section, and other risks beyond our control, including:

- the timing of the initiation of, and progress in, our current and planned clinical trials;
- the results of our clinical trials and preclinical studies, and the results of clinical trials and preclinical studies by others for product candidates or indications similar to ours;

- developments related to the FDA or to regulations applicable to cellular immunotherapies generally or our product candidates in particular including, but not limited to, regulatory pathways and clinical trial requirements for approvals;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- developments related to proprietary rights including patents, litigation matters and our ability to obtain patent protection for our technologies;
- additions or departures of key management or scientific personnel;
- actual or anticipated changes in our research and development activities and our business prospects, including in relation to our competitors;
- developments of technological innovations or new therapeutic products by us or others in the field of immunotherapy;
- announcements or expectations of additional equity or debt financing efforts;
- sales of our common stock by us, including pursuant to the terms of our stock purchase agreement with Juno Therapeutics, Inc., or by our insiders or our other stockholders;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- comments by securities analysts;
- fluctuations in our operating results; and
- general economic and market conditions.

These and other market and industry factors, including the effects of the COVID-19 pandemic on the global economy, may cause the market price and demand for our common stock to fluctuate substantially regardless of our actual operating performance, which may limit or prevent investors from readily selling their shares of common stock and may otherwise negatively affect the liquidity of our common stock.

Changes in our stock price may also trigger financial obligations under our licensing arrangements. For example, pursuant to the terms of our license agreement with MSK, MSK is eligible to receive from us certain milestone payments totaling up to $75.0 million based on the price of our common stock, where the amount of such payments owed to MSK is contingent upon certain increases in the price of our common stock following the date of achievement of a specified clinical milestone. The uncertainty of the price of our common stock at or after the achievement of such milestone results in an inability to ascertain the timing and exact amounts of such milestone payments in advance.

***Our principal stockholders and management own a significant percentage of our stock and may be able to exercise significant control over our company.***

As of February 22, 2021, our executive officers, directors and entities affiliated with our five percent stockholders beneficially own, in the aggregate, shares representing approximately 40.22% of our outstanding voting stock. If, in accordance with the CoD (as such term is defined in Note 9 of the notes to the consolidated financial statements herewith) relating to the Class A Convertible Preferred Stock, Redmile (as such term is defined in Note 9 of the notes to the consolidated financial statements herewith) elects to remove certain limitations on the percentage of the our outstanding common stock that it may own such that the 2,794,549 shares of Class A Convertible Preferred Stock currently held by Redmile become fully convertible at Redmile's option into 13,972,745 shares of common stock, the beneficial ownership of our executive officers, directors and entities affiliated with our five percent stockholders would increase to 47.72%. Although we are not aware of any voting arrangements in place among these stockholders, if these stockholders were to choose to act together, as a result of their stock ownership, they would be able to influence our management and affairs and control all matters submitted to our stockholders for approval, including the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of ownership may have the effect of delaying or preventing a change in control of our company that our other stockholders may believe are in their best interests, or adversely affecting the liquidity, volatility, and market price of our common stock. For example, if any of our directors, executive officers or other entities affiliated with our five percent stockholders elect to sell, transfer or otherwise dispose of a significant amount of shares of our common stock, this could result in a decrease in our stock price. Furthermore, any transferees or successors of all or a significant portion of our existing stockholders' ownership in us will be able to exert a similar amount of control over us through their ownership position.

***We may sell additional equity or debt securities or enter into other arrangements to fund our operations, which may result in dilution to our stockholders and impose restrictions or limitations on our business.***

We expect that significant additional capital will be needed in the future to continue our planned operations, and we may seek additional funding through a combination of equity offerings, debt financings, state or government grants, strategic alliances, licensing and collaboration arrangements, or other third-party business arrangements. These financing activities may have an adverse effect on our stockholders' rights, the market price of our common stock and on our operations and may require us to relinquish rights to some of our technologies, intellectual property or product candidates, issue additional equity or debt securities, or otherwise agree to terms unfavorable to us. Further, in November 2018 we filed a Form S-3 pursuant to which we may issue up to $50.0 million in common stock in sales deemed to be an "at the market offering" as defined by the Securities Act of 1933, as amended (the Securities Act) and, so long as we qualify as a "well-known seasoned issuer" as defined in Rule 405 of the Securities Act, an unlimited amount of shares of our common stock, preferred stock, debt securities, warrants and/or units. Any sale or issuance of securities pursuant to a registration statement or otherwise may result in dilution to our stockholders and may cause the market price of our stock to decline, and new investors could gain rights superior to our existing stockholders. In addition, any debt financings that we may enter into in the future may impose restrictive covenants or otherwise adversely affect the holdings or the rights of our stockholders, and any additional equity financings will be dilutive to our stockholders. Furthermore, additional equity or debt financing might not be available to us on reasonable terms, if at all.

***A significant portion of our total outstanding shares may be sold into the market in the near future, which could cause the market price of our common stock to drop significantly.***

Sales of a substantial number of shares of our common stock in the public market could occur at any time. A significant portion of our outstanding shares of common stock are held by a small number of stockholders, including our directors, officers and significant stockholders. Sales by our stockholders of a substantial number of shares, or the expectation that such sales may occur, could significantly reduce the market price of our common stock.

For example, we registered all of the 5,250,000 shares of common stock issued by us in our August 2016 private placement transaction for resale on a Form S-3, which was declared effective by the SEC in September 2016. We also registered all of the 6,766,915 shares of common stock issued by us and all 14,097,745 shares of common stock issuable upon the conversion of an aggregate of 2,819,549 shares of Class A Convertible Preferred Stock issued by us in our November 2016 private placement transaction for resale on a Form S-3, which was declared effective by the SEC in January 2017. Additionally, we have agreed to register the shares of common stock issued to Johnson & Johnson Innovation – JJDC, Inc. under a stock purchase agreement entered into in connection with the Janssen Agreement pursuant to a registration statement on Form S-3.

We have also registered or intend to register all shares of our common stock subject to options, restricted stock units or other equity awards issued or reserved for future issuance under our equity incentive plans. As a result, these shares will be available for sale in the public market subject to vesting arrangements and exercise of options, and restrictions under applicable securities laws. In addition, certain of executive officers, employees and affiliates have established or may in the future establish programmed selling plans under Rule 10b5-1 of the Securities Exchange Act of 1934, as amended, for the purpose of effecting sales of our common stock. If any of these events cause a large number of our shares to be sold in the public market, the sales could reduce the trading price of our common stock and impede our ability to raise future capital

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

Our management has broad discretion to use our cash, cash equivalents, investments and any additional funds that we may raise to fund our operations and could spend these funds in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline or delay the development of our product candidates. We may invest our cash and cash equivalents in a manner that does not produce income or that loses value.

***Provisions of Delaware law or our charter documents could delay or prevent an acquisition of our company, and could make it more difficult for you to change management.***

Provisions of Delaware law, our amended and restated certificate of incorporation, and our amended and restated bylaws may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions may also prevent or delay attempts by stockholders to replace or remove our current management or members of our board of directors. These provisions include:

- a classified board of directors with limitations on the removal of directors;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings;
- the ability of our board of directors to make, alter or repeal our amended and restated bylaws; and
- the authority of our board of directors to issue preferred stock with such terms as our board of directors may determine.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us. Any provision of our amended and restated certificate of incorporation or amended and restated bylaws or Delaware law that has the effect of delaying or discouraging a potential acquisition proposal or tender offer could limit the opportunity for our stockholders to achieve liquidity for their shares of our common stock, even if the acquisition proposal or tender offer is at a premium over the then-current market price for our common stock, and could also affect the price that some investors are willing to pay for our common stock.

***Our ability to use our net operating loss carryforwards and certain other tax benefits may be limited and, as a result, our future tax liability may increase.***

As of December 31, 2020, we had federal and California net operating loss carryforwards of $186.4 million and $188.0 million, respectively, some of which begin to expire in various amounts in 2027. As of December 31, 2020, we also had federal and California research and development tax credit carryforwards of $18.0 million and $12.9 million, respectively. The federal research and development tax credit carryforwards will begin to expire in 2035 unless previously utilized, while the California carryforwards will carry forward indefinitely. These net operating loss and tax credit carryforwards could expire unused and be unavailable to offset future income tax liabilities. In addition, in general, under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its pre-change net operating losses (NOLs) or tax credits, or NOLs or credits, to offset future taxable income or taxes. Generally, a change of more than 50 percentage points in the ownership of a corporation’s stock, by value, over a three-year period constitutes an ownership change for U.S. federal income tax purposes. We have determined that we triggered an ownership change limitation in November 2009 and again in May 2015. We have determined that we do not believe there were any ownership changes from May 2015 through December 2020. We have not analyzed periods subsequent to December 2020. We may experience additional ownership changes as a result of shifts in our stock ownership in the future. Limits on our ability to use our pre-change NOLs or credits to offset U.S. federal taxable income could potentially result in increased future tax liability to us if we earn net taxable income in the future. The amount of NOLs generated in taxable periods beginning after December 31, 2021, that we are permitted to deduct in any taxable year is limited to 80% of our taxable income in such year, where taxable income is determined without regard to the NOL deduction itself. U.S. federal and certain state NOLs generated in taxable years beginning after December 31, 2017 are not subject to expiration.

**General Risk Factors**

***We could be subject to securities class action litigation.***

The stock market in general, and the Nasdaq Global Market and biotechnology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company’s securities. This type of litigation, if instituted, could result in substantial costs and a diversion of management’s attention and resources, which would harm our business, operating results, or financial condition. Additionally, the dramatic increase in the cost of directors’ and officers’ liability insurance may cause us to opt for lower overall policy limits or to forgo insurance that we may otherwise rely on to cover significant defense costs, settlements, and damages awarded to plaintiffs.

***Unfavorable global economic conditions could adversely affect our business, financial condition or results of operations.***

Our ability to invest in and expand our business and meet our financial obligations, to attract and retain third-party contractors and collaboration partners and to raise additional capital depends on our operating and financial performance, which, in turn, is subject to numerous factors, including the prevailing economic and political conditions and financial, business, regulatory and other factors beyond our control, such as the rate of unemployment, the number of uninsured persons in the United States, political influences and inflationary pressures. For example, an overall decrease in or loss of insurance coverage among individuals in the United States due to high levels of unemployment (particularly as a result of the COVID-19 pandemic), underemployment or the repeal of certain provisions of the ACA may decrease the demand for healthcare services and pharmaceuticals. Additionally, the availability of healthcare services and resources is currently constrained due to the COVID-19 pandemic. If fewer patients are seeking medical care because they do not have insurance coverage or are unable to obtain medical care for their conditions due to resource constraints on the healthcare system, we may experience difficulties in any eventual commercialization of our product candidates and our business, results of operations, financial condition and cash flows could be adversely affected.

In addition, our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets upon which pharmaceutical and biopharmaceutical companies such as us are dependent for sources of capital. In the past, global financial crises have caused extreme volatility and disruptions in the capital and credit markets. A severe or prolonged economic downturn, including as a result of the COVID-19 pandemic, could result in a variety of risks to our business, including a reduced ability to raise additional capital when needed on acceptable terms, if at all, and weakened demand for our product candidates. A weak or declining economy could also strain our suppliers, possibly resulting in supply disruption. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the COVID-19 pandemic, current economic climate and financial market conditions could adversely impact our business.

***We or the third parties upon whom we depend may be adversely affected by earthquakes or other natural disasters, including epidemics and pandemics such as COVID-19, and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.***

Earthquakes or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as our manufacturing facilities or those of our CMOs, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. For example, as a result of the COVID-19 pandemic, we may experience delays or disruptions in our clinical development activities, our research and development activities, and in the supply of drug product for our clinical trials. Any continued or subsequent measures taken by governmental authorities or businesses to contain the spread of COVID-19, or the perception that such measures may be required in the future should another outbreak occur, could adversely affect our business, operations, financial condition, prospects or results of operations by restricting our ability to conduct our clinical trials and research and development activities, and limiting our and our third-party manufacturers' ability to manufacture product and forcing temporary closure of our facilities and facilities that we rely upon. The disaster recovery and business continuity plans we have in place currently are limited and may not prove adequate for protecting and continuing our business in the event that our business is disrupted as a result of the COVID-19 pandemic or other serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, when taken together with our lack of earthquake insurance, could have a material adverse effect on our business.

***If we fail to maintain an effective system of disclosure controls and procedures and internal controls, our ability to produce accurate financial statements or comply with applicable regulations could be impaired.***

As a public company, we are required to comply with the Sarbanes-Oxley Act of 2002, as amended (the Sarbanes-Oxley Act), and the related rules and regulations of the SEC, expanded disclosure requirements, accelerated reporting requirements and more complex accounting rules. Company responsibilities required by the Sarbanes-Oxley Act include establishing and maintaining corporate oversight and adequate internal control over financial reporting and disclosure controls and procedures. Effective internal controls are necessary for us to produce reliable financial reports and are important to help prevent financial fraud.

We cannot assure that we will not have material weaknesses or significant deficiencies in our internal control over financial reporting. If we are unable to successfully remediate any material weakness or significant deficiency in our internal control over financial reporting, or identify any material weaknesses or significant deficiencies that may exist, the accuracy and timing of our financial reporting may be adversely affected, we may be unable to maintain compliance with securities law requirements regarding timely filing of periodic reports in addition to applicable stock exchange listing requirements, and our stock price may decline materially as a result.

***If we fail to comply with environmental, health, and safety laws and regulations, including regulations governing the handling, storage or disposal of hazardous materials, we could become subject to fines or penalties or incur costs that could harm our business.***

We 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 materials, including chemicals, biological materials and infectious agents. Our operations also may produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We will not be able to eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from any use by us 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 for failure to comply with such laws and regulations.

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, 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. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

***Changes in tax law may adversely affect us or our investors.***

The rules dealing with U.S. federal, state and local income taxation are constantly under review by persons involved in the legislative process and by the Internal Revenue Service, or IRS, and the U.S. Treasury Department. Changes to tax laws (which changes may have retroactive application) could adversely affect us or holders of our common stock. In recent years, many such changes have been made and changes are likely to continue to occur in the future. For example, the Tax Cuts and Jobs Act, or the TCJA, was enacted in 2017 and made significant changes to corporate taxation, including the reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, the limitation of the tax deduction for net interest expense to 30% of adjusted taxable income (except for certain small businesses), the limitation of the deduction for net operating losses to 80% of current year taxable income and the elimination of net operating loss carrybacks (though any such net operating losses may be carried forward indefinitely), and the modification or repeal of many business deductions and credits. Additionally, on March 27, 2020, President Trump signed into law the Coronavirus Aid, Relief, and Economic Security Act, which, among other things, suspends the 80% limitation on the deduction for net operating losses in taxable years beginning before January 1, 2021, permits a 5-year carryback of net operating losses arising in taxable years beginning after December 31, 2017 and before January 1, 2021, and generally caps the limitation on the deduction for net interest expense at 50% of adjusted taxable income for taxable years beginning in 2019 and 2020. It cannot be predicted whether, when, in what form, or with what effective dates, tax laws, regulations and rulings may be enacted, promulgated or issued, which could result in an increase in our or our stockholders' tax liability or require changes in the manner in which we operate in order to minimize or mitigate any adverse effects of changes in tax law.

## ITEM 1B. Unresolved Staff Comments

None.

## ITEM 2. Properties

### Facilities

As of December 31, 2020, we occupied approximately 72,000 square feet of office, laboratory and manufacturing space in San Diego, California under a non-cancelable operating lease through December 2028. In addition, we have additional operating leases for office and laboratory space in New York, New York and San Diego, California. We believe that these facilities are adequate for our current needs.

In January 2020, we entered into a lease agreement for approximately 200,000 square feet of office, laboratory, and GMP manufacturing space (the Premises). The Premises is located in San Diego, California and we intend to move our corporate headquarters to the Premises during the third quarter of 2021.

**ITEM 3. Legal Proceedings**

We are not a party to any material legal proceedings at this time. From time to time, we may be subject to various legal proceedings and claims that arise in the ordinary course of our business activities. Although the results of litigation and claims cannot be predicted with certainty, we do not believe we are party to any claim or litigation the outcome of which, if determined adversely to us, would individually or in the aggregate be reasonably expected to have a material adverse effect on our business. Regardless of the outcome, litigation can have an adverse effect on us because of defense and settlement costs, diversion of management resources and other factors.

**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**

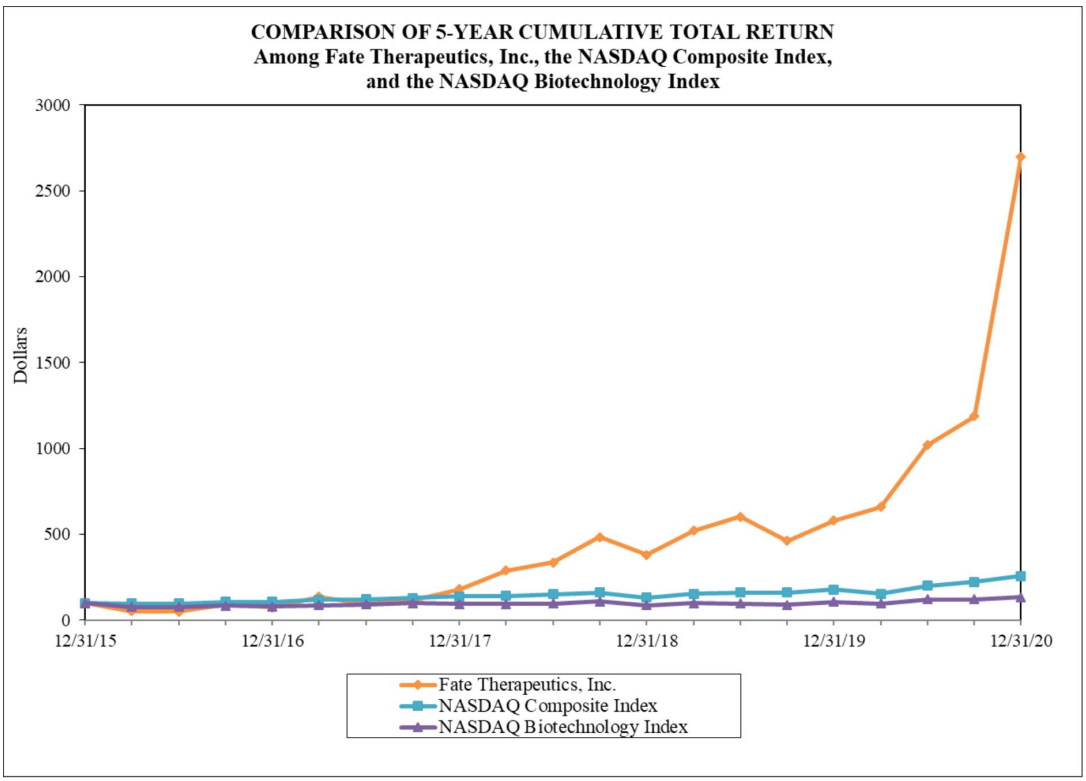
Our ticker symbol is "FATE", as traded and reported by The NASDAQ Global Market.

**Holders of Common Stock**

As of February 22, 2021, there were approximately 27 stockholders of record of our common stock. The approximate number of holders is based upon the actual number of holders registered in our records at such date and excludes holders in "street name" or persons, partnerships, associations, corporations, or other entities identified in security positions listings maintained by depository trust companies.

**Performance Graph**

Set forth below is a graph comparing the cumulative total return on our common stock, the NASDAQ Composite® (US) Index and the NASDAQ Biotechnology Index over the five-year period ending December 31, 2020. The graph assumes that $100 was invested in our common stock and in each of the comparative indices as of the market close on December 31, 2015. The past performance of our common stock is no indication of future performance.




**Dividends**

We have never declared or paid any dividends on our capital or common stock. We currently intend to retain all available funds and any future earnings, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination to pay dividends will be made at the discretion of our board of directors.

**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.

**Recent Sales of Unregistered Securities**

During the year ended December 31, 2020, we did not issue or sell any unregistered securities not previously disclosed in a Quarterly Report on Form 10-Q or in a Current Report on Form 8-K.

**Issuer Purchases of Equity Securities**

We did not repurchase any securities during the year ended December 31, 2020.

**ITEM 6. Selected Financial Data**

Not applicable.

## 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 consolidated financial statements and related notes included under Item 8 of this Annual Report on Form 10-K. The following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those expressed or implied in any forward-looking statements as a result of various factors, including those set forth under the caption "Item 1A. Risk Factors."*

*This section of this Form 10-K generally discusses 2020 and 2019 items and year-to-year comparisons between 2020 and 2019. Discussions of 2018 items and year-to-year comparisons between 2019 and 2018 that are not included in this Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019 as filed with the Securities and Exchange Commission on March 2, 2020 and incorporated herein by reference.*

### Overview

We are a clinical-stage biopharmaceutical company dedicated to the development of programmed cellular immunotherapies for patients with cancer. We are developing first-in-class cell therapy product candidates based on a simple notion: we believe that better cell therapies start with better cells.

To create better cell therapies, we use a therapeutic approach that we generally refer to as cell programming. For certain of our product candidates, we use pharmacologic modulators, such as small molecules, to enhance the biological properties and therapeutic function of allogeneic, or healthy donor-sourced, cells *ex vivo* before our product candidates are administered to a patient. In other cases, we use human induced pluripotent stem cells (iPSCs) to generate a clonal master iPSC line having preferred biological properties, and we direct the fate of the clonal master iPSC line to create our cell therapy product candidate. Analogous to master cell lines used to manufacture biopharmaceutical drug products such as monoclonal antibodies, we believe clonal master iPSC lines can be used as a renewable source for manufacturing cell therapy products which are well-defined and uniform in composition, can be repeatedly mass produced at significant scale in a cost-effective manner, and can be delivered off-the-shelf to treat many patients. Utilizing these therapeutic approaches, we program cells of the blood and immune system and are advancing a pipeline of programmed cellular immunotherapies, including off-the-shelf natural killer (NK) and T-cell product candidates derived from clonal master iPSC lines for the treatment of cancer.

We have entered into a research collaboration and license agreement with the Regents of the University of Minnesota to develop off-the-shelf, engineered NK cell cancer immunotherapies derived from clonal master iPSC lines. Additionally, we have entered into a research collaboration and license agreement with Memorial Sloan Kettering Cancer Center (Memorial Sloan Kettering) to develop off-the-shelf, engineered T-cell cancer immunotherapies derived from clonal master iPSC lines.

In September 2018, we entered into a collaboration and option agreement with Ono Pharmaceutical Co. Ltd. (Ono) for the joint development and commercialization of off-the-shelf, iPSC-derived chimeric antigen receptor (CAR) T-cell product candidates (Ono Agreement) for the treatment of cancer.

In April 2020, we entered into a collaboration and option agreement with Janssen Biotech, Inc. (Janssen), part of the Janssen Pharmaceutical Companies of Johnson & Johnson (Janssen Agreement), for the development and commercialization of off-the-shelf, iPSC-derived CAR NK and CAR T-cell product candidates for the treatment of cancer.

We were incorporated in Delaware in 2007, and are headquartered in San Diego, CA. Since our inception in 2007, we have devoted substantially all of our resources to our cell programming approach and the research and development of our product candidates, the creation, licensing and protection of related intellectual property, and the provision of general and administrative support for these activities. To date, we have funded our operations primarily through the public and private sale of common stock, the private placement of preferred stock and convertible notes, commercial bank debt and revenues from collaboration activities and grants.

We have never been profitable and have incurred net losses in each year since inception. Substantially all of our net losses resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations. We expect to continue to incur operating losses for at least the foreseeable future. Our net losses may fluctuate significantly from quarter to quarter and year to year. We expect our expenses will increase substantially in connection with our ongoing and planned activities as we:

- conduct our ongoing and planned clinical trials of our product candidates;
- conduct GMP production, process and scale-up development and technology transfer activities for the manufacture of our product candidates, including those undergoing clinical investigation and IND-enabling preclinical development;

- procure laboratory equipment, materials and supplies for the manufacture of our product candidates and the conduct of our research activities;
- conduct preclinical and clinical research to investigate the therapeutic activity of our product candidates;
- continue our research, development and manufacturing activities, including under our sponsored research and collaboration agreements with Janssen, Ono, University of Minnesota and Memorial Sloan Kettering;
- maintain, prosecute, protect, expand and enforce our intellectual property portfolio;
- engage with regulatory authorities for the development of, and seek regulatory approvals for, our product candidates;
- establish business operations at our new corporate headquarters, including internal GMP production capabilities;
- hire additional clinical, manufacturing, regulatory, quality control and technical personnel to advance our product candidates;
- hire additional scientific personnel to advance our research and development efforts; and
- hire general and administrative personnel to continue operating as a public company and support our operations.

We do not expect to generate any meaningful product sales or royalty revenue unless and until we successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years. If we obtain regulatory approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. Accordingly, we will seek to fund our operations through public or private equity or debt financings or other sources. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements when needed would have a negative effect on our financial condition and ability to develop our product candidates.

Due to the global outbreak of SARS-CoV-2, the novel strain of coronavirus that causes Coronavirus disease 19 (COVID-19), we experienced impacts on certain aspects of our business, including our clinical trial and research and development activities, during the year ended December 31, 2020. For example, certain of our research and development activities have been delayed or disrupted as a result of measures we have implemented in response to governmental “stay at home” orders and in the interests of public health and safety, and we have experienced delays or disruptions in the initiation and conduct of our clinical trials as a result of prioritization of hospital and other medical resources toward pandemic efforts, policies and procedures implemented at clinical sites with respect to the conduct of clinical trials, and other precautionary measures taken in treating patients or in practicing medicine in response to the COVID-19 pandemic. The scope and duration of these delays and disruptions, and the ultimate impacts of COVID-19 on our operations, are currently unknown. We are continuing to actively monitor the situation and may take further precautionary and preemptive actions as may be required by federal, state or local authorities or that we determine are in the best interests of public health and safety and that of our patient community, employees, partners, and stockholders. We cannot predict the effects that such actions, or the impact of COVID-19 on global business operations and economic conditions, may have on our business, strategy, collaborations, or financial and operating results.

**Financial Operations Overview**

We conduct substantially all of our activities through Fate Therapeutics, Inc., a Delaware corporation, at our facilities in San Diego, California. Fate Therapeutics, Inc. owns 100% of the voting shares of Tfinity Therapeutics, Inc. (Tfinity), 100% of the voting shares of Fate Therapeutics Ltd. (Fate Ltd.), incorporated in the United Kingdom, and 100% of the voting shares of Fate Therapeutics B.V. (Fate B.V.), incorporated in the Netherlands. The following information is presented on a consolidated basis to include the accounts of Fate Therapeutics, Inc., Tfinity, Fate B.V., and Fate Ltd. To date, the aggregate operations of our subsidiaries have not been significant and all intercompany transactions and balances have been eliminated in consolidation.

***Collaboration Revenue***

To date, we have not generated any revenues from therapeutic product sales or royalties. Our revenues have been derived from collaboration agreements and government grants.

*Agreement with Janssen Biotech, Inc.*

On April 2, 2020 (the Effective Date), we entered into a Collaboration and Option Agreement (the Janssen Agreement) with Janssen Biotech, Inc. (Janssen), part of the Janssen Pharmaceutical Companies of Johnson & Johnson. Additionally, on the Effective Date, we entered into a Stock Purchase Agreement (the Stock Purchase Agreement) with Johnson & Johnson Innovation - JJDC, Inc. (JJDC). Under the terms of the Janssen Agreement and the Stock Purchase Agreement taken together, we received $100.0 million, of which $50.0 million is an upfront cash payment and $50.0 million is in the form of an equity investment by JJDC. Additionally, we are entitled to receive fees for the conduct of all research, preclinical development and IND-enabling activities performed by us under the Janssen Agreement.

We determined the common stock purchase by JJDC represented a premium of $9.93 per share, or $16.0 million in aggregate (the Equity Premium), and the remaining $34.0 million was recorded as issuance of common stock in shareholders' equity.

We concluded that Janssen represented a customer and in accordance with Accounting Standards Codification (ASC) 606, *Revenue from Contracts with Customers*, we determined that the initial transaction price under the Janssen Agreement equals $66.0 million, consisting of the upfront, non-refundable and non-creditable payment of $50.0 million and the Equity Premium of $16.0 million. In addition, we identified our potential performance obligations under the Janssen Agreement, including our grant to Janssen of a license to certain of our intellectual property subject to certain conditions, our conduct of research and development services, and our participation in various joint oversight committees. We determined that our grant of a license to Janssen and our conduct of research and development services should be accounted for as one combined performance obligation, and that the combined performance obligation is transferred over the expected term of the conduct of the research and development services, which is estimated to be four years. Additionally, we determined that participation in the various joint oversight committees did not constitute a performance obligation as our participation in the various joint oversight committees does not transfer a service.

During the year ended December 31, 2020, we recognized $16.8 million of collaboration revenue under the Janssen Agreement. As of December 31, 2020, aggregate deferred revenue related to the Janssen Agreement was $59.5 million.

*Agreement with Ono Pharmaceutical Co., Ltd.*

On September 14, 2018, we entered into a Collaboration and Option Agreement (the Ono Agreement) with Ono for the joint development and commercialization of two off-the-shelf iPSC-derived CAR T-cell product candidates (the Collaboration Candidate 1 and the Collaboration Candidate 2). Pursuant to the terms of the Ono Agreement, we received an upfront, non-refundable and non-creditable payment of $10.0 million. Additionally, we are entitled to receive fees for the conduct of research and development under a joint development plan, which fees are estimated to be $20.0 million in aggregate.

We concluded that Ono represented a customer and in accordance with ASC 606, we determined that the initial transaction price under the Ono Agreement equals $30.0 million, consisting of the upfront, non-refundable and non-creditable payment of $10.0 million and the aggregate estimated research and development fees of $20.0 million. In addition, we identified our performance obligations under the Ono Agreement, including our grant to Ono of a license to certain of our intellectual property subject to certain conditions, our conduct of research services, and our participation in a joint steering committee. We determined that all performance obligations should be accounted for as one combined performance obligation since no individual performance obligation is distinct, and that the combined performance obligation is transferred over the expected term of the conduct of the research services, which is estimated to be four years.

On December 4, 2020, we entered into a letter agreement (the Ono Letter Agreement) with Ono in connection with the Ono Agreement. Pursuant to the Ono Letter Agreement, Ono delivered to us proprietary antigen binding domains targeting an antigen expressed on certain solid tumors and nominated such antigen binding domains as the Ono Antigen Binding Domain for incorporation into Collaboration Candidate 2. In connection with such nomination, Ono paid us a milestone fee of $10.0 million for further research and development of Collaboration Candidate 2 under the Ono Agreement, and Ono continues to maintain its option to Collaboration Candidate 2 under the Ono Agreement.

In addition, together with Ono, we agreed to the termination of the Ono Agreement with respect to Collaboration Candidate 1. We retain all rights, in our sole discretion, to research, develop and commercialize Collaboration Candidate 1 throughout the world without any obligation to Ono.

During the years ended December 31, 2020 and 2019, we recognized $14.6 million and $9.3 million, respectively, of collaboration revenue under the Ono Agreement. As of December 31, 2020, aggregate deferred revenue related to the Ono Agreement and Ono Letter Agreement was $7.7 million.

*Agreement with Juno Therapeutics, Inc.*

On May 4, 2015, we entered into a strategic research collaboration and license agreement (the Juno Agreement) with Juno Therapeutics, Inc. (Juno) to screen for and identify small molecule modulators that enhance the therapeutic properties of Juno's genetically-engineered T-cell immunotherapies.

No revenue was recognized during the year ended December 31, 2020. During the year ended December 31, 2019, we recognized $1.4 million of collaboration revenue under the Juno Agreement.

On May 4, 2019, the four-year initial research term under the Juno Agreement concluded as scheduled. The final quarterly research payment of $0.2 million was received during May 2019 and no additional payments are expected.

***Research and Development Expenses***

Research and development expenses consist of costs associated with the research, preclinical development, process and scale-up development, manufacture and clinical development of our product candidates, the research and development of our cell programming technology including our iPSC product platform, and the performance of research and development activities under our collaboration agreements. These costs are expensed as incurred and include:

- salaries and employee-related costs, including stock-based compensation;
- costs incurred under clinical trial agreements with investigative sites;
- costs to acquire, develop and manufacture preclinical study and clinical trial materials, including our product candidates;
- costs associated with conducting our preclinical, process and scale-up development, manufacturing, clinical and regulatory activities, including fees paid to third-party professional consultants, service providers and suppliers;
- costs incurred for our research, development and manufacturing activities, including under our collaboration agreements;
- costs for laboratory equipment, materials and supplies for the manufacture of our product candidates and the conduct of our research activities;
- costs incurred to license and maintain intellectual property; and
- facilities, depreciation and other expenses including allocated expenses for rent and maintenance of facilities.

We plan to increase our current level of research and development expenses for the foreseeable future as we continue the clinical and preclinical development of our product candidates, research and develop our cell programming technology including our iPSC product platform, and perform our obligations under collaboration agreements including under our agreements with Janssen, Ono, University of Minnesota and Memorial Sloan Kettering. Our current planned research and development activities over the next twelve months consist primarily of the following:

- conducting clinical trials of our product candidates;
- conducting GMP production, process and scale-up development and technology transfer activities for the manufacture of our product candidates, including those undergoing clinical investigation and IND-enabling preclinical development;
- procuring laboratory equipment, materials and supplies for the manufacture of our product candidates and the conduct of our research activities;
- conducting preclinical and clinical research to investigate the therapeutic activity of our product candidates; and
- conducting research, development and manufacturing activities, including under our sponsored research and collaboration agreements with Janssen, Ono, University of Minnesota and Memorial Sloan Kettering.

Due to the inherently unpredictable nature of preclinical and clinical development, and given our novel therapeutic approach and the current stage of development of our product candidates, we cannot determine and are unable to estimate with certainty the timelines we will require and the costs we will incur for the development of our product candidates. Clinical and preclinical development timelines and costs, and the potential of development success, can differ materially from expectations. In addition, we cannot forecast which product candidates may be subject to future collaborations, when such arrangements will be secured, if at all, and to what degree such arrangements would affect our development plans and capital requirements. We cannot predict the effects of the impact of COVID-19 on our business and operations, and our expenditures may be increased by delays or disruptions due to the COVID-19 pandemic, including as a result of actions we take in the near term to ensure business continuity and protect against possible supply chain shortages.

***General and Administrative Expenses***

General and administrative expenses consist primarily of salaries and employee-related costs, including stock-based compensation, for our employees in executive, operational, finance and human resource functions; professional fees for accounting, legal and tax services; costs for obtaining, prosecuting and maintaining our intellectual property; and other costs and fees, including director and officer insurance premiums, to support our operations as a public company. We anticipate that our general and administrative expenses will increase in the future as we increase our research and development activities, maintain compliance with exchange listing and SEC requirements and continue to operate as a public company.

***Other Income (Expense)***

Other income (expense) consists of changes in the fair value of stock price appreciation milestones associated with the Amended and Restated Exclusive License Agreement dated May 15, 2018 (the Amended MSK License) with Memorial Sloan Kettering Cancer Center (MSK), interest income earned on cash and cash equivalents, interest income from investments (including the amortization of discounts and premiums), and interest expense for the periods where debt was outstanding.

**Critical Accounting Policies and Significant Judgments and Estimates**

Our management's discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues, and expenses and the disclosure of contingent assets and liabilities in our financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to the fair value of the stock price appreciation milestones for the Amended MSK License, accrued expenses and stock-based compensation. We base our estimates on historical experience, known trends and events, financial models, and various other factors that are believed to be reasonable under 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 or conditions.

While our significant accounting policies are described in more detail in the notes to our financial statements appearing elsewhere in this Annual Report, we believe that the following critical accounting policies reflect the more significant procedures, estimates and assumptions used in the preparation of our consolidated financial statements.

***Revenue Recognition***

We recognize revenue in a manner that depicts the transfer of control of a product or a service to a customer and reflects the amount of the consideration we are entitled to receive in exchange for such product or service. In doing so, we follow a five-step approach: (i) identify the contract with a customer, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations, and (v) recognize revenue when (or as) the customer obtains control of the product or service. We consider the terms of a contract and all relevant facts and circumstances when applying the revenue recognition standard. We apply the revenue recognition standard, including the use of any practical expedients, consistently to contracts with similar characteristics and in similar circumstances.

A customer is a party that has entered into a contract with us, where the purpose of the contract is to obtain a product or a service that is an output of our ordinary activities in exchange for consideration. To be considered a contract, (i) the contract must be approved (in writing, orally, or in accordance with other customary business practices), (ii) each party's rights regarding the product or the service to be transferred can be identified, (iii) the payment terms for the product or the service to be transferred can be identified, (iv) the contract must have commercial substance (that is, the risk, timing or amount of future cash flows is expected to change as a result of the contract), and (v) it is probable that we will collect substantially all of the consideration to which we are entitled to receive in exchange for the transfer of the product or the service.

A performance obligation is defined as a promise to transfer a product or a service to a customer. We identify each promise to transfer a product or a service (or a bundle of products or services, or a series of products and services that are substantially the same and have the same pattern of transfer) that is distinct. A product or a service is distinct if both (i) the customer can benefit from the product or the service either on its own or together with other resources that are readily available to the customer and (ii) our promise to transfer the product or the service to the customer is separately identifiable from other promises in the contract. Each distinct promise to transfer a product or a service is a unit of accounting for revenue recognition. If a promise to transfer a product or a service is not separately identifiable from other promises in the contract, such promises should be combined into a single performance obligation.

The transaction price is the amount of consideration we are entitled to receive in exchange for the transfer of control of a product or a service to a customer. To determine the transaction price, we consider the existence of any significant financing component, the effects of any variable elements, noncash considerations and consideration payable to the customer. If a significant financing component exists, the transaction price is adjusted for the time value of money. If an element of variability exists, we must estimate the consideration we expect to receive and use that amount as the basis for recognizing revenue as the product or the service is transferred to the customer. There are two methods for determining the amount of variable consideration: (i) the expected value method, which is the sum of probability-weighted amounts in a range of possible consideration amounts, and (ii) the mostly likely amount method, which identifies the single most likely amount in a range of possible consideration amounts.

If a contract has multiple performance obligations, we allocate the transaction price to each distinct performance obligation in an amount that reflects the consideration we are entitled to receive in exchange for satisfying each distinct performance obligation. For each distinct performance obligation, revenue is recognized when (or as) we transfer control of the product or the service applicable to such performance obligation. To date, for collaboration arrangements that represent a single performance obligation, the revenues are recognized over time based on costs incurred compared to total estimated costs or based on actual headcount utilized as a percentage of total headcount expected to be utilized over the expected term of the conduct of the research and development services.

In those instances where we first receive consideration in advance of satisfying its performance obligation, we classify such consideration as deferred revenue until (or as) we satisfy such performance obligation. In those instances where we first satisfy our performance obligation prior to our receipt of consideration, the consideration is recorded as accounts receivable.

We expense incremental costs of obtaining a contract as and when incurred if the expected amortization period of the asset that would be recognized is one year or less, or if the amount of the asset is immaterial. Otherwise, such costs are capitalized and amortized to research and development expense ratably in conjunction with the underlying revenue recognition.

***Stock Price Appreciation Milestones***

We estimate the fair value of the stock price appreciation milestones under the Amended MSK License using a Monte Carlo simulation model, which relies on our current stock price as well as significant estimates and assumptions to determine the estimated liability associated with the contingent milestone payments. We account for the fair value of the stock price appreciation milestones in accordance with ASC 815, *Derivatives and Hedging*, with fair value marked to market. The assumptions used to calculate the fair value of the stock price appreciation milestones are subject to a significant amount of judgment including the assessment of achieving a specified clinical milestone, the expected volatility of our common stock, the risk-free interest rate and the estimated term, which is based in part on the last valid patent claim date. We remeasure the fair value of the stock price appreciation milestones at each balance sheet date, with changes in fair value recorded in earnings as a non-operating income or expense.

***Accrued Research and Development Expenses***

As part of the process of preparing our financial statements, we are required to estimate our accrued expenses. This process involves reviewing open contracts and purchase orders, communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date in our financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments if necessary. Examples of accrued research and development expenses include amounts owed to clinical research organizations, to investigative sites in connection with clinical trials, to sponsored research organizations, to service providers in connection with preclinical development activities and to service providers related to product manufacturing, development and distribution of clinical supplies.

We base our accrued expenses related to clinical trials on our estimates of the services performed and efforts expended pursuant to our contractual arrangements, including those with clinical research organizations. The financial terms of these agreements are sometimes subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our service providers will exceed the level of services performed and result in a prepayment of the clinical expense. Payments under some of these contracts depend on factors such as the successful enrollment of patients and the completion of clinical milestones. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid accordingly.

Although we do not expect our estimates to be materially different from expenses actually incurred, if our estimates of the status and timing of services performed differs from the actual status and timing of services performed, we may report amounts that are too high or too low in any particular period. To date, there have been no material differences from our estimates to the amounts actually incurred.

***Stock-Based Compensation***

Stock-based compensation expense represents the grant date fair value of employee stock option and restricted stock unit grants recognized over the requisite service period of the awards (usually the vesting period) on a straight-line basis. For stock option grants with performance-based milestones, the expense is recorded over the remaining service period after the point when the achievement of the milestone is probable or the performance condition has been achieved. For stock option grants with both performance-based milestones and market conditions, expense is recorded over the derived service period after the point when the achievement of the performance-based milestone is probable or the performance condition has been achieved.

We estimate the fair value of stock option grants using the Black-Scholes option pricing model, with the exception of option grants with both performance-based milestones and market conditions, which are valued using a lattice-based model. These models require the use of highly subjective and complex assumptions which determine the fair value of stock-based awards, (a) the risk-free interest rate, (b) the expected volatility of our stock, (c) the expected term of the award and (d) the expected dividend yield. The expected volatility is based on the historical volatility of our common stock over the most recent period commensurate with the estimated expected term of our stock options which is derived from historical experience and anticipated future exercise behavior. The risk-free interest rates for periods within the expected life of the option are based on the yields of zero-coupon U.S. Treasury securities. See Note 9 of the notes to the consolidated financial statements for additional information.

The fair value of restricted stock units is based on the closing price of our common stock as reported on The NASDAQ Global Market on the date of grant.

**Recent Accounting Pronouncements**

For a discussion of recently issued accounting pronouncements, please see Note 1 of the notes to the consolidated financial statements.

**Results of Operations**

***Comparison of Years Ended December 31, 2020 and 2019***

The following table summarizes the results of our operations for the years ended December 31, 2020 and 2019:

| | Years Ended December 31, | | Increase/ (Decrease) |
|---|---|---|---|
| | 2020 | 2019 | |
| | (in thousands) | | |
| Collaboration revenue | $ 31,434 | $ 10,680 | $ 20,754 |
| Research and development expenses | 125,623 | 87,770 | 37,853 |
| General and administrative expenses | 33,896 | 23,637 | 10,259 |
| Total other income (expense), net | (45,302) | 2,578 | (47,880) |

*Revenue.* During the year ended December 31, 2020, we recognized revenue of $31.4 million, under our collaboration agreements with Janssen and Ono. During the year ended December 31, 2019, we recognized revenue of $10.7 million under our collaboration agreements with Ono and Juno.

*Research and development expenses.* Research and development expenses were $125.6 million for the year ended December 31, 2020, compared to $87.8 million for the year ended December 31, 2019. The increase in research and development expenses was attributable primarily to the following:

- $22.4 million increase in employee compensation and benefits expense, including $8.8 million in employee-stock based compensation expense;
- $7.2 million increase in facility lease expense primarily relating to our future headquarters lease, which commenced in January 2020; and
- $6.6 million increase in expenditures for laboratory materials and supplies relating to the manufacture of our product candidates and the conduct of our research activities, including under our collaboration agreements.

*General and administrative expenses.* General and administrative expenses were $33.9 million for the year ended December 31, 2020, compared to $23.6 million for the year ended December 31, 2019. The increase in general and administrative expenses was attributable primarily to the following:

- $7.0 million increase in employee compensation and benefits expense, including $4.5 million in employee stock-based compensation expense; and
- $1.1 million in facility lease expense primarily relating to our future headquarters lease, which commenced in January 2020.

*Other income (expense), net.* Other income (expense), net was ($45.3) million and $2.6 million for the years ended December 31, 2020 and 2019, respectively. During the year ended December 31, 2020, we recorded $47.7 million in other expense attributable to the fair value of the stock price appreciation milestones under the Amended MSK License. Other income (expense), net for the year ended December 31, 2020 also consisted of interest income earned on cash and cash equivalents and interest income from investments (including the amortization of discounts and premiums).

Other income (expense), net for the year ended December 31, 2019 consisted of interest income earned on cash and cash equivalents, interest income from investments (including the amortization of discounts and premiums), and interest expense relating to the term loan with Silicon Valley Bank.

**Liquidity and Capital Resources**

We have incurred losses and negative cash flows from operations since inception. As of December 31, 2020, we had an accumulated deficit of $556.9 million and anticipate that we will continue to incur net losses for the foreseeable future.

The following table sets forth a summary of the net cash flow activity for each of the years ended December 31:

| | 2020 | 2019 |
|---|---|---|
| | (in thousands) | |
| Net cash used in operating activities | $ (39,229) | $ (83,175) |
| Net cash used in investing activities | (161,076) | (157,453) |
| Net cash provided by financing activities | 282,838 | 149,928 |
| Net increase (decrease) in cash, cash equivalents and restricted cash | $ 82,533 | $ (90,700) |

***Operating Activities***

Cash used in operating activities decreased from $83.2 million for the year ended December 31, 2019 to $39.2 million for the year ended December 31, 2020. During the year ended December 31, 2020, cash used in operating activities of $39.2 million was attributable to a net loss of $173.4 million, substantially offset by cash received and recorded as deferred revenue of $66.0 million for the upfront fee and Equity Premium associated with the Janssen Collaboration, and non-cash charges of $47.7 million associated with the fair value of the stock price appreciation milestones under the Amended MSK License and $30.8 million in stock-based compensation expense. These were partially offset by payments made related to contract assets of $13.3 million.

*Agreement with Janssen Biotech, Inc.*

On April 2, 2020 (the Effective Date), we entered into the Janssen Agreement with Janssen to develop iPSC-derived CAR NK and CAR T-cell product candidates for the treatment of cancer. Additionally, on the Effective Date, we entered into the Stock Purchase Agreement with JJDC. Under the terms of the Janssen Agreement and the Stock Purchase Agreement taken together, we received $100.0 million as of the Effective Date, of which $50.0 million is an upfront cash payment and $50.0 million is in the form of an equity investment by JJDC. Of the $50.0 million equity investment, $16.0 million represented a premium over the fair value of our common stock and was classified under operating activities.

We are entitled to receive fees for the conduct of all research, preclinical development and IND-enabling activities performed by us under the Janssen Agreement. Additionally, we are eligible to receive (i) with respect to the first Janssen Cancer Target, payments of up to $898.0 million upon the achievement of specified development, regulatory and sales milestones (the Janssen Milestone Payments) for the first Collaboration Candidate, and up to $460.0 million in Janssen Milestone Payments for each additional Collaboration Candidate, directed to the first Janssen Cancer Target; and (ii) with respect to each of the second, third and fourth Janssen Cancer Targets, payments of up to $706.0 million in Janssen Milestone Payments for each of the first Collaboration Candidates, and up to $340.0 million in Janssen Milestone Payments for each additional Collaboration Candidate, directed to the applicable Janssen Cancer Target, where certain Janssen Milestone Payments are subject to reduction in the event we elect to co-commercialize and share equally in the profits and losses in the United States of a respective Collaboration Candidate. We are further eligible to receive double-digit tiered royalties ranging up to the mid-teens on net sales of Collaboration Candidates that are commercialized by Janssen under the Janssen Agreement, subject to reduction under certain circumstances. No milestone or royalty payments have been received by us as of December 31, 2020.

As a direct result of our entry into the Janssen Agreement, we incurred $13.3 million in sublicense fees to certain of our existing licensors. The $13.3 million in sublicense consideration represents an asset under ASC 340, *Other Assets and Deferred Costs.* As of December 31, 2020, all such consideration has been paid.

*Agreement with Ono Pharmaceutical Co., Ltd.*

On September 14, 2018, we entered into the Ono Agreement with Ono for the joint development and commercialization of two off-the-shelf, iPSC-derived CAR T-cell product candidates (each a Candidate and collectively the Candidates). Under the terms of the Ono Agreement, Ono paid to us an upfront, non-refundable and non-creditable payment of $10.0 million. Additionally, as consideration for our conduct of research and preclinical development under a joint development plan, Ono pays us annual research and development fees set forth in the annual budget included in the joint development plan, which fees are estimated to be $20.0 million in aggregate over the course of the joint development plan. Further, under the terms of the Ono Agreement, Ono had agreed to pay us up to an additional $40.0 million, subject to the achievement of a preclinical milestone and the exercise by Ono of its options to obtain exclusive licenses to develop and commercialize the Candidates. Such fees are in addition to the upfront payment and research and development fees.

Pursuant to the Ono Agreement, we and Ono are jointly conducting research and development activities under a joint development plan, with the goal of advancing Candidate 2 to a pre-defined preclinical milestone. We have granted to Ono, during a specified period of time, an option to obtain an exclusive license under certain intellectual property rights to develop and commercialize Candidate 2 in all territories of the world, with us retaining the right to co-develop and co-commercialize Candidate 2 in the United States and Europe under a joint arrangement whereby it is eligible to share at least 50% of the profits and losses.

On December 4, 2020, we entered into the Ono Letter Agreement with Ono in connection with the Ono Agreement. Pursuant to the Ono Letter Agreement, Ono delivered to us proprietary antigen binding domains targeting an antigen expressed on certain solid tumors, and nominated such antigen binding domains as the Ono Antigen Binding Domain for incorporation into Collaboration Candidate 2. In connection with such nomination, Ono paid us a milestone fee of $10.0 million in December 2020 for further research and development of Collaboration Candidate 2 under the Ono Agreement, and Ono continues to maintain its option to Collaboration Candidate 2 under the Ono Agreement. In addition, the Ono Letter Agreement terminated further development with respect to Candidate 1.

Subject to Ono's exercise of its options to obtain exclusive licenses to develop and commercialize Candidate 2 and to the achievement of certain clinical, regulatory and commercial milestones in specified territories, we are eligible to receive an aggregate of up to $885.0 million in milestone payments for Candidate 2, with the applicable milestone payments for Candidate 2 for the United States and Europe subject to reduction by 50% if we elect to co-develop and co-commercialize Candidate 2 as described above. As of December 31, 2020, we have not received any milestone payments other than the $10.0 million associated with the Ono Letter Agreement in December 2020. We are also eligible to receive tiered royalties ranging from the mid-single digits to the low-double digits based on annual net sales by Ono for Candidate 2 in specified territories, with such royalties subject to certain reductions. As of December 31, 2020, no royalties have been paid to us.

As a direct result of our entry into the Ono Agreement and the Ono Letter Agreement, we incurred an aggregate of $4.0 million in sublicense consideration to certain of our existing licensors. The $4.0 million in sublicense consideration represents an asset under ASC 340, *Other Assets and Deferred Costs.* As of December 31, 2020, $2.0 million such consideration has been paid, with the remaining $2.0 million included in accounts payable on our consolidated balance sheet at December 31, 2020.

*Agreement with Juno Therapeutics, Inc.*

On May 4, 2015, we entered into a strategic research collaboration and license agreement with Juno Therapeutics, Inc. (the Juno Agreement) to screen for and identify small molecule modulators that enhance the therapeutic properties of Juno's genetically-engineered T-cell immunotherapies.

On May 4, 2019, the four-year initial research term under the Juno Agreement concluded as scheduled and the overall agreement terminated upon our receipt of the final quarterly research payment of $0.2 million.

*Memorial Sloan Kettering Cancer Center License Agreement*

On May 15, 2018, we entered into the Amended MSK License with MSK. The Amended MSK License amends and restates the Exclusive License Agreement entered into between us and MSK on August 19, 2016, pursuant to which we entered into an exclusive license agreement with MSK for rights relating to compositions and methods covering iPSC-derived cellular immunotherapy, including T-cells and NK-cells derived from iPSCs engineered with CARs.

Pursuant to the Amended MSK License, MSK granted us additional licenses to certain patents and patent applications relating to new CAR constructs and off-the-shelf CAR T cells, including the use of clustered regularly interspaced short palindromic repeat (CRISPR) and other innovative technologies for their production, in each case to research, develop, and commercialize licensed products in the field of all human therapeutic uses worldwide. We have the right to grant sublicenses to certain licensed rights in accordance with the terms of the Amended MSK License, in which case we are obligated to pay MSK a percentage of certain sublicense income received.

In the event a licensed product achieves a specified clinical milestone, MSK is then eligible to receive certain milestone payments totaling up to $75.0 million based on the price of the Company's common stock, where the amount of such payments owed to MSK is contingent upon certain increases in the price of our common stock following the date of achievement of such clinical milestone. These payments are based on common stock price multiples, with the numerator being the fair value of the ten-trading day trailing average closing price of the Company's common stock and the denominator being the ten-trading day trailing average closing price of the Company's common stock as of the effective date of the Amended MSK License, adjusted for any stock splits, cash dividends, stock dividends, other distributions, combinations, recapitalizations, or similar events. Under the terms of the Amended MSK License, upon a change of control of the Company, in certain circumstances, we may be required to pay a portion of these payments to MSK based on the price of our common stock in connection with such change of control.

As of December 31, 2020, we recorded a liability of $47.7 million associated with the stock price appreciation milestones for the Amended MSK License. To date, no licensed products have achieved the specified clinical milestone, and no stock price appreciation milestones are currently owed to MSK.

***Investing Activities***

During the years ended December 31, 2020 and 2019, investing activities used cash of $161.1 million and $157.5 million, respectively. During the year ended December 31, 2020 we purchased $277.3 million of investments, which were partially offset by $121.2 million in maturities of investments. During the year ended December 31, 2019, we purchased $248.9 million of investments, offset by $98.8 million in maturities of investments. The remaining investing activities for the periods presented were primarily attributable to the purchase of property and equipment.

***Financing Activities***

Financing activities provided cash of $282.8 million for the year ended December 31, 2020, which primarily consisted of $188.8 million of net proceeds from our June 2020 public offering of common stock, $50.0 million of net proceeds from our June 2020 private placement of common stock, and $33.9 million of net proceeds from the issuance of common stock in conjunction with our collaboration agreement with Janssen, which amount represents the fair value of the equity component from Janssen's common stock purchase in connection with the collaboration agreement.

Financing activities provided cash of $149.9 million for the year ended December 31, 2019, which primarily consisted of $162.4 million of net proceeds from our September 2019 public offering of common stock. These proceeds were partially offset by $15.0 million in repayments on our long-term debt facility.

From our inception through December 31, 2020 we have funded our consolidated operations primarily through the public and private sale of common stock, the private placement of preferred stock and convertible notes, commercial bank debt and revenues from collaboration activities and grants. As of December 31, 2020, we had aggregate cash and cash equivalents and investments of $482.9 million.

*Stock Purchase Agreement with JJDC*

In April 2020, we entered into a Stock Purchase Agreement with JJDC. Under the Stock Purchase Agreement, we sold 1.6 million shares of our common stock to JJDC at $31.00 per share, for an aggregate purchase price of $50.0 million, of which $34.0 million was considered an equity component of the transaction, while the remaining $16.0 million was classified as a cash flow from operating activities.

*Public Offerings of Common Stock*

In June 2020, we completed a public offering of common stock in which investors, certain of which are affiliated with one of our directors, purchased 7.1 million shares of our common stock at a price of $28.31 per share under a shelf registration statement. Gross proceeds from the offering were $201.3 million. After giving effect to $12.5 million in underwriting discounts, commissions and expenses related to the offering, net proceeds were $188.8 million.

In September 2019, we completed a public offering of common stock in which investors, certain of which are affiliated with one of our directors, purchased 9.9 million shares of our common stock at a price of $17.50 per share under our shelf registration statement. Gross proceeds from the offering were $173.1 million. After giving effect to $10.7 million in underwriting discounts, commissions and expenses related to the offering, net proceeds were $162.4 million.

*Private Placement of Common Stock*

In June 2020, we exercised our right to cause JJDC to purchase, and JJDC purchased, in a private placement 1.8 million shares of our common stock at a price of $28.31 per share, for aggregate proceeds of $50.0 million. The shares of common stock purchased in the private placement were not subject to any underwriting discounts or commissions.

*California Institute for Regenerative Medicine Award*

On April 5, 2018, we executed an award agreement with the CIRM pursuant to which CIRM awarded us $4.0 million to advance our FT516 product candidate into a first-in-human clinical trial (the Award). Pursuant to the terms of the Award, we are eligible to receive five disbursements in varying amounts totaling $4.0 million throughout the project period of the Award. In November 2019, we submitted an IND application for FT516 in advanced solid tumors. As of December 31, 2020, the Company has received aggregate disbursements under the Award in the amount of $4.0 million.

The Award is subject to certain co-funding requirements by us. We, in our sole discretion, have the option to treat the Award either as a loan or as a grant. In the event we elect to treat the Award as a loan, we will be obligated to repay i) 60%, ii) 80%, iii) 100% or iv) 100% plus interest at 7% plus LIBOR, of the total Award to CIRM, where such repayment rate is dependent upon the phase of clinical development of FT516 at the time of our election. If we do not elect to treat the Award as a loan within 10 years of the date of the Award, the Award will be considered a grant and we will be obligated to pay to CIRM a royalty on commercial sales of FT516 until such royalty payments equal nine times the total amount awarded to us under the Award.

*Silicon Valley Bank Debt Facility*

On July 30, 2014, we entered into an Amended and Restated Loan and Security Agreement (Restated LSA) with Silicon Valley Bank (the Bank), collateralized by substantially all of our assets, excluding certain intellectual property. On July 14, 2017, we entered into an amendment (SVB Loan Amendment) of the Restated LSA with the Bank where the Bank extended an additional term loan to us in the principal amount of $15.0 million (2017 Term Loan), a portion of which was applied to repay in full all amounts previously outstanding under the Restated LSA. On November 13, 2019 we used cash on hand in the amount of $14.2 million to repay in full all outstanding obligations related to the Restated LSA and SVB Loan Amendment. Accordingly, all of our obligations under the Restated LSA and SVB Loan Amendment have been paid and discharged in full, and all security interests and other liens granted by us to the Bank to secure our obligations have been terminated and released.

*Registration Statements on Form S-3*

In November 2018, we filed an automatic shelf registration statement (File No. 333-228513), which became effective upon filing. The shelf registration statement allows us to issue certain securities, including shares of our common stock, from time to time. The specific terms of any offering under the automatic shelf registration statement are established at the time of such offering. Additionally, we entered into a sales agreement with Leerink Partners LLC (Leerink) with respect to an at-the-market offering program, under which we may offer and sell, from time to time at our sole discretion, shares of our common stock having an aggregate offering price of up to $50.0 million through Leerink as the sales agent, pursuant to this automatic shelf registration statement.

In addition, as of December 31, 2020, we are eligible to issue an aggregate of $6.2 million in securities under a previously filed shelf registration statement (File No. 333-224680), which was declared effective by the SEC in May 2018.

*Operating Capital Requirements*

We anticipate that we will continue to incur losses for the foreseeable future, and we expect the losses to increase as we continue the research, manufacture and development of, and seek regulatory approvals for, our product candidates and conduct additional research, manufacturing and development activities pursuant to our collaboration agreements with Janssen and Ono. Our product candidates have not yet achieved regulatory approval and we may not be successful in achieving commercialization of our product candidates.

We believe our existing cash and cash equivalents and investments as of December 31, 2020 will be sufficient to fund our projected operating requirements for at least the next twelve months. However, we are subject to all the risks and uncertainties incident in the research, manufacture and development of therapeutic products. For example, the FDA or other regulatory authorities may require us to generate additional data or conduct additional preclinical studies, manufacturing activities, or clinical trials, or may impose other requirements beyond those that we currently anticipate. Additionally, it is possible for a product candidate to show promising results in preclinical studies or in clinical trials, but fail to establish sufficient safety and efficacy data necessary to obtain regulatory approvals. As a result of these and other risks and uncertainties and the probability of success, the duration and the cost of our research, manufacturing and development activities required to advance a product candidate cannot be accurately estimated and are subject to considerable variation. We may encounter difficulties, complications, delays and other unknown factors and unforeseen expenses in the course of our research, manufacturing and development activities, any of which may significantly increase our capital requirements and could adversely affect our liquidity.

We will require additional capital for the research, manufacture and development of our product candidates and to perform our obligations under our collaboration agreements, and we may need to seek additional funds sooner than expected due to any changes in our business, operations, financial condition or prospects, including any impacts of the COVID-19 pandemic. We expect to finance our capital requirements in the foreseeable future through the sale of public or private equity or debt securities. However, additional capital may not be available to us on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the research, manufacture or development of one or more of our product candidates. If we do raise additional funds through the issuance of additional equity or debt securities, it could result in dilution to our existing stockholders, increased fixed payment obligations and the existence of securities with rights that may be senior to those of our common stock. Additionally, if we incur indebtedness, we may become subject to financial or other covenants that could adversely restrict, impair or affect our ability to conduct our business, such as requiring us to relinquish rights to certain of our product candidates or technologies or limiting our ability to acquire, sell or license intellectual property rights or incur additional debt. Any of these events could significantly harm our business, operations, financial condition and prospects. In addition, while the full impact of the COVID-19 pandemic on our business, operations, financial condition and prospects, and on the global economy, are currently unknown and difficult to predict, the pandemic has caused significant disruptions and created uncertainties in the global financial markets, and the economic impacts of the pandemic could materially and adversely affect our ability to raise capital through equity or debt financings in the future.

Our forecast of the period of time through which our existing cash and cash equivalents and investments will be adequate to support our operations is a forward-looking statement and involves significant risks and uncertainties. We have based this forecast on assumptions that may prove to be wrong, and actual results could vary materially from our expectations, which may adversely affect our capital resources and liquidity. We could utilize our available capital resources sooner than we currently expect. The amount and timing of future funding requirements, both near- and long-term, will depend on many factors, including, but not limited to:

- the initiation, timing, progress, size, duration, costs and results of our clinical trials and preclinical studies for our product candidates;
- the number and the nature of product candidates that we pursue;
- the time to and cost of establishing business operations at our new corporate headquarters, including internal GMP production capabilities to support the clinical and potential commercial manufacture of our product candidates;
- the cost of GMP production, process and scale-up development and technology transfer activities for the manufacture of our product candidates, including the cost of laboratory equipment, materials and supplies to support these activities;
- the time, cost and outcome of seeking and obtaining regulatory approvals;
- the extent to which we are required to pay milestone or other payments under our existing in-license agreements and any in-license agreements that we may enter into in the future, and the timing of such payments, including payments owed to MSK in connection with the stock price appreciation milestones;
- the extent to which milestones are achieved under our collaboration agreements with Ono and Janssen, and any other strategic partnership or collaboration agreements that we may enter into in the future, and the time to achievement of such milestones and our receipt of any associated milestone payments;
- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the cost of our research and development activities, including our need and ability to hire additional employees and procure additional equipment, materials and supplies;
- the establishment and continuation of collaborations and strategic alliances;

- the timing and terms of future in-licensing and out-licensing transactions; and
- the cost of establishing sales, marketing, manufacturing and distribution capabilities for, and the pricing and reimbursement of, any products for which we may receive regulatory approval.

In addition, we are closely monitoring ongoing developments in connection with the COVID-19 pandemic and evaluating adjustments to our business and operations, which may negatively impact our financial condition and prospects and our operating results. We will continue to assess our operating capital requirements and may make adjustments to our business and operations if circumstances warrant. If we cannot continue or expand our research, manufacturing and development operations, or otherwise capitalize on our business opportunities, because we lack sufficient capital, our business, operations, financial condition and prospects could be materially adversely affected**.**

**Contractual Obligations and Commitments**

We lease our headquarters office and laboratory space under a non-cancelable operating lease, comprising approximately 72,000 square feet. In addition to rent, the lease is subject to certain fixed amenities fees. The lease is subject to additional variable charges for common area maintenance and other costs. We maintain the right to terminate the lease after October 2025, subject to our delivery to the landlord of twelve months' prior written notice and an early termination payment of $2.5 million. See Note 8 of the consolidated financial statements for additional detail.

During January 2020, we entered into a new lease agreement for a future headquarters facility (the Premises). The Premises are located in San Diego, California and we intend to move our corporate headquarters to the Premises during the third quarter of 2021. Lease payments commence, subject to certain conditions, in May 2021 (the Rent Commencement Date) and the lease has a lease term of 15 years starting from the Rent Commencement Date. We have the option to extend the lease for two successive five-year periods. We also have a one-time option to terminate the lease after 10 years from the Rent Commencement Date, subject to payment of a $30.0 million early termination fee. See Note 8 of the consolidated financial statements for additional detail.

Total undiscounted aggregate future operating lease obligations under all of our operating leases, as of December 31, 2020 are $194.0 million.

We have no material contractual obligations not fully recorded on our consolidated balance sheets or fully disclosed in the notes to the financial statements.

We have obligations under various license agreements to make future payments to third parties that become due and payable on the achievement of certain development, regulatory and commercial milestones (such as the start of a clinical trial, filing for product approval with the FDA or other regulatory agencies, product approval by the FDA or other regulatory agencies, product launch or product sales) or on the sublicense of our rights to another party. We have not included these commitments on our balance sheet or in the table above because the achievement and timing of these events is not fixed and determinable. Certain milestones are in advance of receipt of revenue from the sale of products and, therefore, we may require additional debt or equity capital to make such payments. These commitments include:

- Under a license agreement with Children's Medical Center Corporation pursuant to which we license certain patents relating to our *ex vivo* cell programming approach and our programmed hematopoietic cell therapies, we are required to make annual maintenance payments and payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate milestone payments we may be obligated to make per product are $5.0 million. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low- to mid-single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low single digits. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of any sublicense income.
- Under a license agreement with the Whitehead Institute for Biomedical Research, pursuant to which we license certain patents relating to our iPSC product platform, we are required to make annual maintenance payments and payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate milestone payments we may be obligated to make per product are $2.3 million. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low single digits. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of any sublicense income.

- Under license agreements with The Scripps Research Institute (TSRI), pursuant to which we license certain patents relating to our iPSC product platform, we are required to make annual maintenance payments and payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate milestone payments we may be obligated to make are $1.8 million. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low- to mid-single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low single digits. We have the right to sublicense our rights under these agreements, and we will be required to pay a percentage of any sublicense income.
- Under a license agreement with the Regents of the University of Minnesota, pursuant to which we license certain patents relating to compositions and uses of NK cells and to compositions of engineered receptors and immune cells expressing such receptors, we are required to make annual maintenance payments and payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate milestone payments we may be obligated to make per product are $4.6 million. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low single digits. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of any sublicense income.
- Under a license agreement with Memorial Sloan Kettering Cancer Center, pursuant to which we license certain patents relating to compositions and uses of T cells derived from iPSCs, CARs and genetic modifications using CRISPR, we are required to make annual maintenance payments and payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate milestone payments we may be obligated to make per product are $12.5 million. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property up to the high-single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low- to mid-single digits. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of any sublicense income. Additionally, in the event a licensed product achieves a specified clinical milestone, Memorial Sloan Kettering Cancer Center is then eligible to receive additional milestone payments, where the amount of such payments owed to Memorial Sloan Kettering Cancer Center are contingent upon certain increases in the price of our common stock following the date of achievement of such clinical milestone. See Note 2 of the notes to the consolidated financial statements for additional detail related to the stock price appreciation milestone payments.

We enter into contracts in the normal course of business, including with clinical sites and professional service providers for the conduct of clinical trials, contract manufacturers for the production of our product candidates, contract research service providers for preclinical research studies, professional consultants for expert advice and vendors for the sourcing of clinical and laboratory supplies and materials. These contracts generally provide for termination on notice, and therefore are cancelable contracts and not included in the table of contractual obligations and commitments.

## ITEM 7A. Quantitative and Qualitative Disclosures about Market Risk

### *Interest Rate Risk*

We are exposed to market risk primarily related to changes in interest rates. As of December 31, 2020, our cash and cash equivalents consisted of cash and money market mutual funds, and our investments consisted of United States treasuries and corporate debt securities with maturities up to eighteen months from the date of acquisition. Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of U.S. interest rates. However, because of the relatively short-term nature and low risk profile of the instruments in our portfolio, a 10% change in market interest rates would not have a material impact on our financial condition and/or results of operations.

### *Stock Price Sensitivity*

We entered into a license agreement with MSK under which we obtained rights relating to compositions and methods covering iPSC-derived cellular immunotherapy, including T cells and NK cells derived from iPSCs engineered with CARs. MSK is eligible to receive certain milestone payments totaling up to $75.0 million in the event a licensed product achieves a specified clinical milestone, where the amount of such payments owed to MSK is contingent upon certain increases in the price of our common stock following the date of achievement of such clinical milestone. As of December 31, 2020, the estimated fair value of the stock price appreciation milestones was $47.7 million.

Changes in the price our common stock as of each balance sheet date may cause a relatively large change in the estimated fair value of the stock price appreciation milestones and the associated liability and resulting expense or gain. See Note 5 to our consolidated financial statements for a related sensitivity analysis.

**ITEM 8. Financial Statements and Supplementary Data**

**Report of Independent Registered Public Accounting Firm**

The Board of Directors and Stockholders of Fate Therapeutics, Inc

**Opinion on the Financial Statements**

We have audited the accompanying consolidated balance sheets of Fate Therapeutics, Inc. as of December 31, 2020 and 2019, the related consolidated statements of operations and comprehensive loss, convertible preferred stock and stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have 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, 2020, based on criteria established in Internal Control- Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 24, 2021, expressed an unqualified opinion thereon.

**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 consolidated 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.

***Determination of appropriate accounting of the collaboration and option agreement with Janssen Biotech, Inc.***

*Description of the matter*

As described in Note 2 to the consolidated financial statements, the Company entered into a Collaboration and Option Agreement (the Janssen Agreement) and Stock Purchase Agreement with Janssen Biotech, Inc. during the year ended December 31, 2020. Under the Janssen agreement the Company concluded that Janssen represented a customer as defined by Accounting Standards Codification (ASC) 606, Revenue from Contracts with Customers. The Company identified its potential performance obligations, including its grant of a license to Janssen to certain intellectual property, its conduct of research and development services (R&D services) and its participation in various joint oversight committees. In determining the appropriate accounting treatment, the Company concluded the Janssen Agreement represented a single distinct performance obligation due to the highly interdependent and interrelated nature of the licensed technology and the conduct and results of the R&D services. Fulfillment of the performance obligation was determined to occur throughout the term of the contract. After considering the impact of both variable elements and potential milestones, the Company determined that the initial transaction price under the Janssen Agreement equals $66.0 million, which consists of an upfront payment of $50.0 million and a $16 million premium received on the sale of the Company's common stock.

Given the subjective nature of this judgement and the potential impact on the revenue to be recognized, we identified the evaluation as to whether any promises or services described in the collaboration agreement should be considered as distinct performance obligations in the context of the contract to be a critical audit matter.

*How we addressed the matter in our audit*

We tested the controls over the appropriateness for the accounting of the collaboration and option agreement, including management review controls over the identification of and accounting for the performance obligations identified in the contract.

To test the conclusion that the various promises under the contract collectively constituted one performance obligation , we read the collaboration and option agreement, discussed the potential performance obligations with management including those performing the research services, and evaluated whether management's accounting position considered all relevant facts and terms included in the agreement. We further evaluated management's technical analysis and evaluated management's conclusions to determine whether they had appropriately considered and applied the guidance and interpretations associated with performance obligations within ASC 606.

***Revenue recognition – Revenue recognized over time***

*Description of the Matter*

As more fully described in Note 2 of the financial statements, the Company has concluded that the grant of intellectual property licenses and the delivery of related research and development services under certain of its existing collaboration agreements represent a combined performance obligation for which the Company recognizes collaboration revenues as the research services are transferred over time. Revenue is recognized over the estimated period of time to conduct the research services based on an appropriate measure of progress towards satisfaction of the identified performance obligation. Collaboration revenue is significant to our audit because the revenue recognition assessment process involves inherent uncertainty, uses subjective assumptions, and the amounts involved are material to the financial statements taken as a whole. The subjective assumptions relate to the estimated total costs expected to be incurred and the estimated total full-time employees (FTEs) expected to be utilized under each agreement.

*How We Addressed the Matter in Our Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's revenue recognition review process including controls over management's review of the significant assumptions described above. For example, we tested controls over the development of the estimated costs and estimated full-time employees to complete and the review of the estimates by management.

To test revenue recognized we performed audit procedures that included, among other things, testing the assumptions and underlying data used by the Company in its computations and testing the accuracy of the computations. We inspected evidence supporting actual FTEs utilized and the amount of actual costs incurred and assessed whether they were appropriate costs according to the terms of the contract. We performed corroborative inquiries of individuals outside of the finance department to assess the reasonableness of management's estimates of total estimated costs and total FTEs to understand the progress to date and the estimate of total inputs. In addition, we performed sensitivity analyses, including assessing the reasonableness of the estimated costs to be incurred and estimated FTEs to be utilized as of the reporting date based on current factors.

***Fair value of stock price appreciation milestones***

*Description of the matter*

As more fully described in Note 2 to the financial statements, under the terms of the Memorial Sloan Kettering (MSK) Cancer Center License Agreement (the Agreement), MSK is eligible to receive certain milestone payments totaling up to $75.0 million based on the price of the Company's common stock (the "stock price appreciation milestones") contingent on a licensed product achieving a specified clinical milestone (the "clinical milestone"). The Company uses a Monte Carlo simulation methodology to estimate the fair value of the milestone payments at the end of each reporting period which models future Company common stock prices based on the current stock price and several key variables. As the stock price appreciation milestones are first contingent upon the achievement of the clinical milestone, the Company also estimates the fair value of the stock price appreciation milestones based on the probability of achieving the clinical milestone. The assessment of the probability of achieving the clinical milestone in turn considers several factors including the successful achievement of technological, manufacturing, and regulatory requirements.

Auditing the Company's valuation of the stock price appreciation milestones is significant to our audit as the Company uses a complex valuation methodology that incorporates significant assumptions which include the estimated term, estimated volatility of the Company's common stock price as well as the estimated probability of achieving the clinical milestone. The fair value measurement is highly sensitive to changes in these inputs.

*How we addressed the matter in our audit*

We tested controls over the risks of material misstatement relating to the valuation of the stock price appreciation milestones. For example, we tested controls over management's review of the valuation model, the underlying assumptions used in the model and the probability of achieving the clinical milestone.

To test the valuation of the stock price appreciation milestones, our audit procedures included, among others, evaluating the methodology used in the valuation model and testing the significant assumptions. For example, we assessed the estimated license end date, and we compared the forecasted volatility of the Company's common stock price to its historical volatility. Further, we evaluated the reasonableness of management's assumptions over the probability of achieving the clinical milestone by comparing the assumptions within the model to internal communications to management and the Board of Directors and conducting inquiries with those responsible for clinical affairs regarding the progress of the ongoing trial. We also assessed the completeness and accuracy of the underlying data. In addition, we involved our internal valuation specialists to assist in our evaluation of the significant assumptions and methodology used by the Company. We have also evaluated the Company's financial statement disclosures related to these matters included in Note 2 to the Consolidated Financial Statements.

**/s/ Ernst & Young, LLP**

We have served as the Company's auditor since 2009.

San Diego, California

February 24, 2021

**Fate Therapeutics, Inc.**

**Consolidated Balance Sheets**

**(In thousands, except par value and share data)**

| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 167,347 | $ 99,814 |
| Accounts receivable | 5,515 | — |
| Short-term investments and related maturity receivables | 315,569 | 121,613 |
| Prepaid expenses and other current assets | 5,892 | 5,662 |
| Total current assets | 494,323 | 227,089 |
| Long-term investments | — | 39,440 |
| Property and equipment, net | 32,308 | 11,419 |
| Operating lease right-of-use assets | 67,084 | 22,752 |
| Restricted cash | 15,227 | 227 |
| Collaboration contract assets | 13,506 | 1,338 |
| Other assets | 9 | 9 |
| Total assets | $ 622,457 | $ 302,274 |
| | | |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities: | | |
| Accounts payable | $ 6,283 | $ 5,822 |
| Accrued expenses | 15,564 | 14,697 |
| CIRM award liability, current portion | 3,200 | 2,808 |
| Deferred revenue, current portion | 21,144 | 2,787 |
| Operating lease liabilities, current portion | 3,355 | 1,692 |
| Stock price appreciation milestones, current portion | 36,018 | — |
| Total current liabilities | 85,564 | 27,806 |
| Deferred revenue, net of current portion | 46,021 | 3,775 |
| CIRM award liability, net of current portion | 800 | 702 |
| Operating lease liabilities, net of current portion | 93,943 | 25,235 |
| Stock price appreciation milestones, net of current portion | 11,684 | — |
| Commitments and contingencies | | |
| Stockholders' equity: | | |
| Preferred stock, $0.001 par value; authorized shares—5,000,000 at December 31, 2020 and December 31, 2019; Class A Convertible Preferred shares issued and outstanding—2,794,549 at December 31, 2020 and December 31, 2019 | 3 | 3 |
| Common stock, $0.001 par value; authorized shares—150,000,000 at December 31, 2020 and December 31, 2019; issued and outstanding—87,722,237 at December 31, 2020 and 75,730,260 at December 31, 2019 | 88 | 76 |
| Additional paid-in capital | 941,216 | 628,200 |
| Accumulated other comprehensive gain | 70 | 22 |
| Accumulated deficit | (556,932) | (383,545) |
| Total stockholders' equity | 384,445 | 244,756 |
| Total liabilities and stockholders' equity | $ 622,457 | $ 302,274 |

See accompanying notes.

**Fate Therapeutics, Inc.**

**Consolidated Statements of Operations and Comprehensive Loss**

**(In thousands, except share and per share data)**

| | For the Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Collaboration revenue | $ 31,434 | $ 10,680 | $ 4,740 |
| Operating expenses: | | | |
| Research and development | 125,623 | 87,770 | 56,024 |
| General and administrative | 33,896 | 23,637 | 15,808 |
| Total operating expenses | 159,519 | 111,407 | 71,832 |
| Loss from operations | (128,085) | (100,727) | (67,092) |
| Other income (expense): | | | |
| Interest income | 2,400 | 4,330 | 2,190 |
| Interest expense | — | (1,752) | (1,696) |
| Change in fair value of stock price appreciation milestones | (47,702) | — | — |
| Total other income (expense), net | (45,302) | 2,578 | 494 |
| Net loss | $ (173,387) | $ (98,149) | $ (66,598) |
| Other comprehensive loss: | | | |
| Unrealized gain on available-for-sale securities, net | 48 | 24 | 1 |
| Comprehensive loss | $ (173,339) | $ (98,125) | $ (66,597) |
| Net loss per common share, basic and diluted | $ (2.10) | $ (1.44) | $ (1.19) |
| Weighted–average common shares used to compute basic and diluted net loss per share | 82,385,319 | 68,190,741 | 56,195,650 |

See accompanying notes.

**Fate Therapeutics, Inc.**

**Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity**

**(In thousands, except share data)**

| | Convertible Preferred Stock | | Common Stock | | Additional Paid-in Capital | Accumulated Other Comprehensive Gain (Loss) | Accumulated Deficit | Total Stockholders' Equity |
|---|---|---|---|---|---|---|---|---|
| | Shares | Amount | Shares | Amount | | | | |
| Balance at December 31, 2017 | 2,819,549 | $ 3 | 52,648,601 | $ 53 | $ 295,934 | $ (3) | $ (218,798) | $ 77,189 |
| Exercise of stock options, net of issuance costs | — | — | 694,830 | 1 | 2,692 | — | — | 2,693 |
| Stock–based compensation | — | — | — | — | 6,293 | — | — | 6,293 |
| Public offering of common stock, net of offering costs | — | — | 10,648,149 | 11 | 134,780 | — | — | 134,791 |
| Issuance of common stock upon cashless warrant exercise | — | — | 102,101 | — | — | — | — | — |
| Issuance of common stock for license agreements | — | — | 600,000 | — | 6,100 | — | — | 6,100 |
| Unrealized gain on investments | — | — | — | — | — | 1 | — | 1 |
| Net loss | — | — | — | — | — | — | (66,598) | (66,598) |
| Balance at December 31, 2018 | 2,819,549 | $ 3 | 64,693,681 | $ 65 | $ 445,799 | $ (2) | $ (285,396) | $ 160,469 |
| Exercise of stock options, net of issuance costs | — | — | 787,434 | 1 | 2,595 | — | — | 2,596 |
| Issuance of common stock upon vesting of restricted stock units | — | — | 172,625 | — | — | — | — | — |
| Stock–based compensation | — | — | — | — | 17,410 | — | — | 17,410 |
| Public offering of common stock, net of offering costs | — | — | 9,890,000 | 10 | 162,396 | — | — | 162,406 |
| Issuance of common stock upon cashless warrant exercise | — | — | 61,520 | — | — | — | — | — |
| Conversion of preferred shares to common stock | (25,000) | — | 125,000 | — | — | — | — | — |
| Unrealized gain on investments | — | — | — | — | — | 24 | — | 24 |
| Net loss | — | — | — | — | — | — | (98,149) | (98,149) |
| Balance at December 31, 2019 | 2,794,549 | $ 3 | 75,730,260 | $ 76 | $ 628,200 | $ 22 | $ (383,545) | $ 244,756 |
| Exercise of stock options, net of issuance costs | — | — | 1,419,117 | 1 | 9,581 | — | — | 9,582 |
| Issuance of common stock upon vesting of restricted stock units | — | — | 85,000 | — | — | — | — | — |
| Stock–based compensation | — | — | — | — | 30,753 | — | — | 30,753 |
| Public offering of common stock, net of offering costs | — | — | 7,108,796 | 7 | 188,777 | — | — | 188,784 |
| Private placement of common stock, net of issuance costs | | | 1,766,160 | 2 | 49,973 | — | — | 49,975 |
| Issuance of stock to collaboration partner, net of issuance costs | — | — | 1,612,904 | 2 | 33,932 | — | — | 33,934 |
| Unrealized gain on investments | — | — | — | — | — | 48 | — | 48 |
| Net loss | — | — | — | — | — | — | (173,387) | (173,387) |
| Balance at December 31, 2020 | 2,794,549 | $ 3 | 87,722,237 | $ 88 | $ 941,216 | $ 70 | $ (556,932) | $ 384,445 |

See accompanying notes

**Fate Therapeutics, Inc.**

**Consolidated Statements of Cash Flows**

**(in thousands)**

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| **Operating activities:** | | | |
| Net loss | $ (173,387) | $ (98,149) | $ (66,598) |
| Adjustments to reconcile net loss to net cash used in operating activities | | | |
| Depreciation and amortization | 3,087 | 2,193 | 1,204 |
| Stock–based compensation | 30,753 | 17,410 | 6,293 |
| Amortization of debt discounts and debt issuance costs | — | 115 | 76 |
| Accretion and amortization of premiums and discounts on investments, net | 1,676 | (478) | (335) |
| Amortization of collaboration contract asset | 3,110 | 620 | 42 |
| Noncash interest expense | — | — | 373 |
| Deferred rent | — | — | 192 |
| Deferred revenue | 60,603 | (8,526) | 12,259 |
| Issuance of common stock for license agreement | — | — | 6,100 |
| Change in fair value of stock price appreciation milestones | 47,702 | — | — |
| Changes in assets and liabilities: | | | |
| Accounts receivable | (5,515) | 500 | (500) |
| Prepaid expenses and other assets | (13,582) | (1,911) | (2,010) |
| Accounts payable and accrued expenses | (1,554) | 4,277 | 4,254 |
| Right-of-use assets and lease liabilities, net | 7,878 | 774 | — |
| Net cash used in operating activities | (39,229) | (83,175) | (38,650) |
| **Investing activities** | | | |
| Purchases of property and equipment | (4,932) | (7,395) | (2,303) |
| Purchases of investments | (277,344) | (248,858) | (55,660) |
| Maturities of investments | 121,200 | 98,800 | 57,500 |
| Net cash used in investing activities | (161,076) | (157,453) | (463) |
| **Financing activities** | | | |
| Issuance of common stock from equity incentive plans, net of issuance costs | 9,655 | 2,522 | 2,693 |
| Proceeds from public offering of common stock, net of issuance costs | 188,784 | 162,406 | 134,577 |
| Proceeds from private placement of common stock, net of issuance costs | 49,975 | — | — |
| Proceeds from sale of common stock to collaboration partner, net of issuance costs | 33,934 | — | — |
| Proceeds from CIRM award | 490 | — | 3,510 |
| Principal repayments of long–term debt | — | (15,000) | — |
| Net cash provided by financing activities | 282,838 | 149,928 | 140,780 |
| Net change in cash, cash equivalents and restricted cash | 82,533 | (90,700) | 101,667 |
| Cash, cash equivalents and restricted cash at beginning of the period | 100,041 | 190,741 | 89,074 |
| Cash, cash equivalents and restricted cash at end of the period | $ 182,574 | $ 100,041 | $ 190,741 |
| **Supplemental disclosure of cash flow information** | | | |
| Interest paid | $ — | $ 2,291 | $ 1,242 |
| **Supplemental schedule of noncash investing and financing activities** | | | |
| Purchases of property and equipment in accounts payable | $ 1,486 | $ 602 | $ 37 |
| Right-of-use assets obtained in exchange for lease obligations | $ 49,287 | $ 13 | $ — |

See accompanying notes.

**Fate Therapeutics, Inc.**

**Notes to Consolidated Financial Statements**

## 1. Organization and Summary of Significant Accounting Policies

### Organization

Fate Therapeutics, Inc. (the Company) was incorporated in the state of Delaware on April 27, 2007 and has its principal operations in San Diego, California. The Company is a clinical-stage biopharmaceutical company dedicated to the development of programmed cellular immunotherapies for patients with cancer, including off-the-shelf natural killer (NK) and T-cell product candidates derived from clonal master engineered induced pluripotent stem cell (iPSC) lines.

As of December 31, 2020, the Company has devoted substantially all of its efforts to product development, raising capital and building infrastructure and has not generated any revenues from any sales of its therapeutic products. To date, the Company's revenues have been derived from collaboration agreements and government grants.

### Public Equity Offerings

In June 2020, the Company completed a public offering of common stock in which investors, certain of which are affiliated with a director of the Company, purchased 7.1 million shares of its common stock at a price of $28.31 per share under a shelf registration statement. Gross proceeds from the offering were $201.3 million, and after giving effect to $12.5 million of costs related to the offering, net proceeds were $188.8 million.

In September 2019, the Company completed a public offering of common stock in which investors, certain of which are affiliated with a director of the Company, purchased 9.9 million shares of its common stock at a price of $17.50 per share under a shelf registration statement. Gross proceeds from the offering were $173.1 million, and, after giving effect to $10.7 million of costs related to the offering, net proceeds were $162.4 million.

In September 2018, the Company completed a public offering of common stock in which investors, certain of which are affiliated with a director of the Company, purchased 10.6 million shares of its common stock at a price of $13.50 per share under a shelf registration statement. Gross proceeds from the offering were $143.8 million, and, after giving effect to $8.9 million of costs related to the offering, net proceeds were $134.9 million.

### Private Placements of Common Stock

In June 2020, in connection with the June 2020 public offering of common stock, the Company exercised its right to cause an existing shareholder, Johnson & Johnson Innovation-JJDC, Inc (JJDC), to purchase $50.0 million of the Company's common stock, and JJDC purchased in a private placement 1.8 million shares of the Company's common stock at a price of $28.31 per share, for aggregate proceeds of $50.0 million. In April 2020, in connection with the Janssen Agreement described in Note 2, JJDC purchased in a private placement 1.6 million shares of the Company's common stock at a price of $31.00 per share, for aggregate proceeds of $50.0 million. The shares of common stock purchased in the private placements were not subject to any underwriting discounts or commissions.

### Use of Estimates

The Company's consolidated financial statements are prepared in accordance with United States generally accepted accounting principles (U.S. GAAP). The preparation of the Company's consolidated financial statements requires it to make estimates and assumptions that impact the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in the Company's consolidated financial statements and accompanying notes. The most significant estimates in the Company's consolidated financial statements relate to its stock appreciation milestone obligations, contracts containing leases, accrued expenses and the estimated total costs expected to be incurred under the Company's collaboration agreements. Although these estimates are based on the Company's knowledge of current events and actions it may undertake in the future, actual results may ultimately materially differ from these estimates and assumptions.

**Risks and Uncertainties**

Due to the global outbreak of SARS-CoV-2, the novel strain of coronavirus that causes Coronavirus disease 19 (COVID-19), the Company experienced impacts on certain aspects of its business, including its clinical trial and research and development activities, during the year ended December 31, 2020. For example, certain of the Company's research and development activities have been delayed or disrupted as a result of measures the Company implemented in response to governmental "stay at home" orders and in the interests of public health and safety, and the Company has experienced delays or disruptions in the initiation and conduct of its clinical trials as a result of prioritization of hospital and other medical resources toward pandemic efforts, policies and procedures implemented at clinical sites with respect to the conduct of clinical trials, and other precautionary measures taken in treating patients or in practicing medicine in response to the COVID-19 pandemic. The scope and duration of these delays and disruptions, and the ultimate impacts of COVID-19 on the Company's operations, are currently unknown. The Company is continuing to actively monitor the situation and may take further precautionary and preemptive actions as may be required by federal, state or local authorities or that it determines are in the best interests of public health and safety and that of the Company's patient community, employees, partners, and stockholders. The Company cannot predict the effects that such actions, or the impact of COVID-19 on global business operations and economic conditions, may have on its business, strategy, collaborations, or financial and operating results.

**Principles of Consolidation**

The consolidated financial statements include the accounts of the Company and its subsidiaries, Fate Therapeutics Ltd., incorporated in the United Kingdom, Fate Therapeutics, B.V., incorporated in the Netherlands and Tfinity Therapeutics, Inc., incorporated in the United States. To date, the aggregate operations of these subsidiaries have not been significant and all intercompany transactions and balances have been eliminated in consolidation.

**Segment Reporting**

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company views its operations and manages its business in one operating and reportable segment.

**Fair Value of Financial Instruments**

The Company's financial instruments consist primarily of cash and cash equivalents, marketable securities, accounts receivable, stock price appreciation milestones, accounts payable, and accrued liabilities. The carrying amounts of accounts receivable, accounts payable and accrued liabilities are considered to be representative of their respective fair values because of the relatively short-term nature of those instruments. Based on the borrowing rates available to the Company for loans with similar terms, which is considered a Level 2 as described below, the Company believes that the fair value of long-term debt approximates its carrying value during the periods when debt was outstanding.

The accounting guidance defines fair value, establishes a consistent framework for measuring fair value and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, the accounting guidance establishes a three- tier fair value hierarchy, which prioritizes the inputs used in measuring fair value as follows:

Level 1: Observable inputs such as quoted prices in active markets;

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and

Level 3: Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

Assets and liabilities are classified based on the lowest level of input that is significant to the fair value measurements. The Company reviews the fair value hierarchy classification on a quarterly basis.

**Cash, Cash Equivalents and Restricted Cash**

Cash and cash equivalents include cash in readily available checking and savings accounts, money market accounts and money market funds. The Company considers all highly liquid investments with an original maturity of three months or less from the date of purchase to be cash equivalents.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the consolidated balance sheets that sum to the total of the same such amounts shown in the consolidated statements of cash flows as of December 31, 2020, 2019 and 2018 (in thousands):

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Cash and cash equivalents | $ 167,347 | $ 99,814 | $ 190,514 |
| Restricted cash | 15,227 | 227 | 227 |
| Total cash, cash equivalents, and restricted cash shown in the consolidated statement of cash flows | $ 182,574 | $ 100,041 | $ 190,741 |

In January 2020, the Company entered into a lease for a facility in San Diego that it intends to use as its new corporate headquarters. In lieu of a security deposit, Silicon Valley Bank issued a $15.0 million letter of credit on the Company's behalf, which letter of credit is secured by a deposit of equal amount. For the years ended December 31, 2020, 2019 and 2018, the restricted cash balance includes cash-collateralized irrevocable standby letters of credit in the amounts of $15.2 million, $0.2 million, and $0.2 million, respectively, associated with the Company's facilities leases.

**Investments**

Investments are accounted for as available-for-sale securities and are carried at fair value on the consolidated balance sheets. Upon initial recognition of the investment and at each reporting period, the Company evaluates whether any unrealized losses on investments are attributable to a credit loss or other factors. Any unrealized losses attributable to credit loss are recorded through an allowance for credit losses, limited to the amount by which the fair value is below amortized cost, with the offsetting amount recorded in other income or expense in the consolidated statement of operations and comprehensive loss. Unrealized losses not attributable to an expected credit loss and unrealized gains on investments are recorded in other comprehensive income (loss) on the consolidated statements of operations and comprehensive loss. Realized gains and losses, if any, on investments classified as available-for-sale securities are included in other income or expense.

The amortized cost of investments classified as available-for-sale debt securities is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization and accretion are included in interest income. The cost of securities sold is based on the specific identification method. Interest and dividends on securities classified as available-for-sale are included in interest income.

**Concentration of Credit Risk**

Financial instruments, which potentially subject the Company to a significant concentration of credit risk, consist primarily of cash and cash equivalents and investments. The Company maintains deposits in federally insured financial institutions in excess of federally insured limits. The Company has not experienced any losses in such accounts and management believes that the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which those deposits and investments are held.

**Property and Equipment**

Property and equipment are recorded at cost and depreciated using the straight-line method over the estimated useful lives of the assets (generally two to five years) and generally consist of furniture and fixtures, computers, scientific and office equipment, and in-process costs related to facilities construction. Repairs and maintenance costs are charged to expense as incurred.

**Impairment of Long-Lived Assets**

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. An impairment loss is recorded if and when events and circumstances indicate that assets might be impaired and the undiscounted cash flows estimated to be generated by those assets are less than the carrying amount of those assets. If the carrying amount is not recoverable, the Company measures the amount of any impairment by comparing the carrying value of the asset to the present value of the expected future cash flows associated with the use of the asset. While the Company's current and historical operating losses and negative cash flows are indicators of impairment, management believes that future cash flows to be received support the carrying value of its long-lived assets and, accordingly, has not recognized any impairment losses since inception.

**Leases**

The Company determines if a contract contains a lease at the inception of the contract. The Company currently has leases related to its facilities leased for office and laboratory space, which are classified as operating leases. These leases result in operating right-of-use (ROU) assets, current operating lease liabilities, and non-current operating lease liabilities in the Company's consolidated balance sheets. The Company does not have any financing leases. Leases with a term of 12 months or less are considered short-term and ROU assets and lease obligations are not recognized. Payments associated with short-term leases are expensed on a straight-line basis over the lease term.

Lease liabilities represent an obligation to make lease payments arising from the lease and ROU assets represent the right to use the underlying asset identified in the lease for the lease term. Lease liabilities are measured at the present value of the lease payments not yet paid discounted using the discount rate for the lease established at the lease commencement date. To determine the present value, the implicit rate is used when readily determinable. For those leases where the implicit rate is not provided, the Company determines an incremental borrowing rate based on the information available at the lease commencement date in determining the present value of lease payments. ROU assets are measured as the present value of the lease payments and also include any prepaid lease payments made and any other indirect costs incurred, and exclude any lease incentives received. Lease terms may include the impact of options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for operating leases is recognized on a straight-line basis over the lease term. The Company aggregates all lease and non-lease components for each class of underlying assets into a single lease component.

**Revenue Recognition**

The Company recognizes revenue in a manner that depicts the transfer of control of a product or a service to a customer and reflects the amount of the consideration the Company is entitled to receive in exchange for such product or service. In doing so, the Company follows a five-step approach: (i) identify the contract with a customer, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations, and (v) recognize revenue when (or as) the customer obtains control of the product or service. The Company considers the terms of a contract and all relevant facts and circumstances when applying the revenue recognition standard. The Company applies the revenue recognition standard, including the use of any practical expedients, consistently to contracts with similar characteristics and in similar circumstances.

A customer is a party that has entered into a contract with the Company, where the purpose of the contract is to obtain a product or a service that is an output of the Company's ordinary activities in exchange for consideration. To be considered a contract, (i) the contract must be approved (in writing, orally, or in accordance with other customary business practices), (ii) each party's rights regarding the product or the service to be transferred can be identified, (iii) the payment terms for the product or the service to be transferred can be identified, (iv) the contract must have commercial substance (that is, the risk, timing or amount of future cash flows is expected to change as a result of the contract), and (v) it is probable that the Company will collect substantially all of the consideration to which it is entitled to receive in exchange for the transfer of the product or the service.

A performance obligation is defined as a promise to transfer a product or a service to a customer. The Company identifies each promise to transfer a product or a service (or a bundle of products or services, or a series of products and services that are substantially the same and have the same pattern of transfer) that is distinct. A product or a service is distinct if both (i) the customer can benefit from the product or the service either on its own or together with other resources that are readily available to the customer and (ii) the Company's promise to transfer the product or the service to the customer is separately identifiable from other promises in the contract. Each distinct promise to transfer a product or a service is a unit of accounting for revenue recognition. If a promise to transfer a product or a service is not separately identifiable from other promises in the contract, such promises should be combined into a single performance obligation.

The transaction price is the amount of consideration the Company is entitled to receive in exchange for the transfer of control of a product or a service to a customer. To determine the transaction price, the Company considers the existence of any significant financing component, the effects of any variable elements, noncash considerations and consideration payable to the customer. If a significant financing component exists, the transaction price is adjusted for the time value of money. If an element of variability exists, the Company must estimate the consideration it expects to receive and uses that amount as the basis for recognizing revenue as the product or the service is transferred to the customer. There are two methods for determining the amount of variable consideration: (i) the expected value method, which is the sum of probability-weighted amounts in a range of possible consideration amounts, and (ii) the mostly likely amount method, which identifies the single most likely amount in a range of possible consideration amounts.

If a contract has multiple performance obligations, the Company allocates the transaction price to each distinct performance obligation in an amount that reflects the consideration the Company is entitled to receive in exchange for satisfying each distinct performance obligation. For each distinct performance obligation, revenue is recognized when (or as) the Company transfers control of the product or the service applicable to such performance obligation.

In those instances where the Company first receives consideration in advance of satisfying its performance obligation, the Company classifies such consideration as deferred revenue until (or as) the Company satisfies such performance obligation. In those instances where the Company first satisfies its performance obligation prior to its receipt of consideration, the consideration is recorded as accounts receivable.

The Company expenses incremental costs of obtaining and fulfilling a contract as and when incurred if the expected amortization period of the asset that would be recognized is one year or less, or if the amount of the asset is immaterial. Otherwise, such costs are capitalized as contract assets if they are incremental to the contract and amortized to expense proportionate to revenue recognition of the underlying contract.

**Stock Price Appreciation Milestones**

The Company estimates the fair value of the stock price appreciation milestones associated with the Amended and Restated Exclusive License Agreement with Memorial Sloan Kettering Cancer Center, using a Monte Carlo simulation model, which relies on the Company's current stock price as well as significant estimates and assumptions to determine the estimated liability associated with the contingent milestone payments. The Company accounts for the fair value of the stock price appreciation milestones in accordance with ASC 815, *Derivatives and Hedging*, with fair value marked to market at each reporting date. The assumptions used to calculate the fair value of the stock price appreciation milestones are subject to a significant amount of judgment including the probability of achieving a specified clinical milestone, the expected volatility of the Company's common stock, the risk-free interest rate, and the estimated term, which is based in part on the last valid patent claim date. The Company remeasures the fair value of the stock price appreciation milestones at each balance sheet date, with changes in fair value recorded in earnings as non-operating income or expense on the consolidated statements of operations and comprehensive loss.

**Research and Development Costs**

All research and development costs are expensed as incurred.

**Patent Costs**

Costs related to filing and pursuing patent applications are recorded as general and administrative expense and expensed as incurred since recoverability of such expenditures is uncertain.

**Stock-Based Compensation**

Stock-based compensation expense represents the cost of the grant date fair value of employee stock option and restricted stock unit grants recognized over the requisite service period of the awards (usually the vesting period) on a straight-line basis. For stock option grants for which vesting is subject to performance-based milestones, the expense is recorded over the remaining service period after the point when the achievement of the milestone is probable or the performance condition has been achieved. For stock option grants for which vesting is subject to both performance-based milestones and market conditions, expense is recorded over the derived service period after the point when the achievement of the performance-based milestone is probable or the performance condition has been achieved. The Company estimates the fair value of stock option grants using the Black-Scholes option pricing model, with the exception of option grants for which vesting is subject to both performance-based milestones and market conditions, which are valued using a lattice-based model. The fair value of restricted stock units is based on the closing price of the Company's common stock as reported on The Nasdaq Global Market on the date of grant. The Company recognizes forfeitures for all awards as such forfeitures occur.

**Convertible Preferred Stock**

The Company applies the relevant accounting standards to distinguish liabilities from equity when assessing the classification and measurement of preferred stock. Preferred shares subject to mandatory redemptions are considered liabilities and measured at fair value. Conditionally redeemable preferred shares are considered temporary equity. All other preferred shares are considered as stockholders' equity.

The Company applies the relevant accounting standards for derivatives and hedging (in addition to distinguishing liabilities from equity) when accounting for hybrid contracts that contain conversion options. Conversion options must be bifurcated from the host instruments and accounted for as free-standing financial instruments according to certain criteria. These criteria include circumstances when (i) the economic characteristics and risks of the embedded derivative instruments are not clearly and closely related to the economic characteristics and risks of the host contract, (ii) the hybrid instrument that embodies both the embedded derivative instrument and the host contract is not re-measured at fair value under otherwise applicable accounting principles with changes in fair value reported in earnings as they occurred, and (iii) a separate instrument with the same terms as the embedded derivative instrument would be considered a derivative instrument. The derivative is subsequently measured at fair value at each reporting date, with the changes in fair value reported in earnings.

**Income Taxes**

The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, deferred tax assets and liabilities are determined on the basis of the differences between the financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

The Company recognizes net deferred tax assets to the extent that the Company believes these assets are more likely than not to be realized. In making such a determination, management considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. If management determines that the Company would be able to realize its deferred tax assets in the future in excess of their net recorded amount, management would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The Company records uncertain tax positions on the basis of a two-step process whereby (1) management determines whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more- likely-than-not recognition threshold, management recognizes the largest amount of tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority. The Company recognizes interest and penalties related to unrecognized tax benefits within income tax expense. Any accrued interest and penalties are included within the related tax liability.

**Comprehensive Loss**

Comprehensive loss is defined as a change in equity during a period from transactions and other events and circumstances from non-owner sources. Other comprehensive loss includes unrealized gains and losses, other than losses attributable to a credit loss which are included in other income and expense, on investments classified as available-for-sale securities, which was the only difference between net loss and comprehensive loss for the applicable periods.

**Net Loss Per Common Share**

Basic net loss per common share is calculated by dividing the net loss by the weighted-average number of common shares outstanding for the period, without consideration for common stock equivalents. Dilutive common stock equivalents comprise convertible preferred stock, warrants for the purchase of common stock, and common stock options and restricted stock units outstanding under the Company's stock option plans. For all periods presented, there is no difference in the number of common shares used to calculate basic and diluted common shares outstanding due to the Company's net loss position.

Potentially dilutive securities are not included in the calculation of diluted net loss per common share because to do so would be anti-dilutive are as follows (in common stock equivalent shares):

| | As of December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Warrants for common stock | — | — | 85,094 |
| Common stock options | 10,432,822 | 9,327,742 | 6,980,581 |
| Restricted stock units | 1,401,732 | 520,000 | 188,625 |
| Series A convertible preferred stock (if converted) | 13,972,745 | 13,972,745 | 14,097,745 |
| Total | 25,807,299 | 23,820,487 | 21,352,045 |

**Going Concern Assessment**

Substantial doubt about an entity's ability to continue as a going concern exists when relevant conditions and events, considered in the aggregate, indicate that it is probable that the entity will be unable to meet its obligations as they become due within one year from the financial statement issuance date. The Company determined that there are no conditions or events that raise substantial doubt about its ability to continue as a going concern for a period of at least twelve months from the date of issuance of these financial statements.

**Recently Adopted Accounting Pronouncements**

In December 2019, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2019-12, *Simplifying the Accounting for Income Taxes*, which simplifies the accounting for income taxes by removing certain exceptions to the general principles in Accounting Standards Codification (ASC) Topic 740 and amends existing guidance to improve consistent application. ASU 2019-12 is effective for fiscal years beginning after December 15, 2020 and early adoption is permitted. The only exception addressed in ASU 2019-12 applicable to the Company is the elimination of the intra-period exception to allocating income taxes when there are losses from continuing operations. The guidance is to be applied prospectively at the beginning in the year of adoption. The Company elected to early adopt the standard as of January 1, 2020 using the prospective method, and such adoption did not have a material impact on the Company's consolidated financial statements.

In November 2018, the FASB issued ASU 2018-18, which clarifies the interaction between ASC Topic 808, *Collaborative Arrangements*, and ASC Topic 606, *Revenue from Contracts with Customers*. The guidance, among other items, clarifies that certain transactions between collaborative participants should be accounted for as revenue under Topic 606 when the collaborative arrangement participant is a customer in the context of a unit of account. ASU 2018-18 is effective for fiscal years beginning after December 15, 2019. The Company adopted the standard effective January 1, 2020, and such adoption did not have a material impact on the Company's consolidated financial statements.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement*, which amends the disclosure requirements in ASC 820 by adding, changing, or removing certain disclosures. ASU 2018-13 is effective for fiscal years beginning after December 15, 2019. The Company adopted the standard effective January 1, 2020, and such adoption did not have a material impact on the Company's consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses: Measurement of Credit Losses on Financial Instruments*, which amends the impairment model by requiring entities to use a forward-looking approach based on expected losses to estimate credit losses on certain types of financial instruments, including trade receivables and available-for-sale debt securities. The standard is effective for fiscal years beginning after December 15, 2019, with early adoption permitted. The Company adopted the standard effective January 1, 2020 using the modified retrospective approach. Due to the nature of the Company's investment portfolio, the adoption of the guidance did not have a material effect on the Company's consolidated financial statements and no allowance was recorded for expected credit losses.

**Recently Issues Accounting Pronouncements**

In August 2020, the FASB issued ASU 2020-06, *Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging – Contracts in Entity's Own Equity (Subtopic 815-40): Accounting* 74 *for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies the accounting for certain financial instruments with characteristics of liabilities and equity, including convertible instruments, and amends existing earnings-per-share, or EPS, guidance by requiring that an entity use the if-converted method when calculating diluted EPS for convertible instruments. ASU 2020-06 is effective for fiscal years beginning after December 15, 2021, including interim periods within those fiscal years, with early adoption permitted for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. The Company plans to adopt ASU 2020-06 effective January 1, 2022 and is currently evaluating the effect ASU 2020-06 will have on its consolidated financial statements and related disclosures.

**2. Collaboration and License Agreements**

**Janssen Collaboration and Option Agreement**

On April 2, 2020 (the Effective Date), the Company entered into a Collaboration and Option Agreement (the Janssen Agreement) with Janssen Biotech, Inc. (Janssen), part of the Janssen Pharmaceutical Companies of Johnson & Johnson. Additionally, on the Effective Date, the Company entered into a Stock Purchase Agreement (the Stock Purchase Agreement) with Johnson & Johnson Innovation – JJDC, Inc. (JJDC).

Upon entering the Janssen Agreement, the Company received an upfront, non-refundable and non-creditable payment of $50.0 million. Under the Janssen Agreement, Janssen and the Company will collaborate to develop iPSC-derived CAR NK and CAR T-cell product candidates for the treatment of cancer. Janssen will contribute proprietary antigen binding domains directed to up to four tumor-associated antigen targets (the Janssen Cancer Targets). The Company will research and construct iPSC-derived CAR NK and CAR T-cell product candidates directed to each of the Janssen Cancer Targets (the Collaboration Candidates) and perform preclinical development of Collaboration Candidates. Upon the Company's completion of activities sufficient to allow the filing of an Investigational New Drug (IND) application for a Collaboration Candidate, Janssen will have the right to exercise an exclusive option and obtain an exclusive license to the Company's intellectual property rights for the development and commercialization of such Collaboration Candidate. Upon the exercise of such exclusive option, Janssen will be solely responsible for the worldwide clinical development and commercialization of such Collaboration Candidate, and the Company will be primarily responsible for the manufacture, at Janssen's cost, of such Collaboration Candidate. For each Collaboration Candidate, upon attaining clinical proof-of-concept, the Company shall have the right to elect to co-commercialize and share equally in the profits and losses in the United States, subject to the Company sharing in certain development costs.

Under the terms of the Janssen Agreement, the Company is entitled to receive full funding for all research, preclinical development and IND-enabling activities performed by the Company for Collaboration Candidates, and is eligible to receive (i) with respect to the first Janssen Cancer Target, payments of up to $898.0 million upon the achievement of specified development, regulatory and sales milestones (the Janssen Milestone Payments) for the first Collaboration Candidate, and up to $460.0 million in Janssen Milestone Payments for each additional Collaboration Candidate, directed to the first Janssen Cancer Target; and (ii) with respect to each of the second, third and fourth Janssen Cancer Targets, up to $706.0 million in Janssen Milestone Payments for each of the first Collaboration Candidates, and up to $340.0 million in Janssen Milestone Payments for each additional Collaboration Candidate, directed to the applicable Janssen Cancer Target, where certain Janssen Milestone Payments under (i) and (ii) are subject to reduction in the event the Company elects to co-commercialize and share equally in the profits and losses in the United States of a respective Collaboration Candidate. The Company is further eligible to receive double-digit tiered royalties ranging up to the mid-teens on net sales of Collaboration Candidates that are commercialized by Janssen under the Janssen Agreement, subject to reduction under certain circumstances.

Under the Stock Purchase Agreement, the Company sold 1.6 million shares of common stock to JJDC at $31.00 per share, for an aggregate purchase price of approximately $50.0 million, on April 7, 2020. The Company determined that this common stock purchase represented a premium of $9.93 per share, or $16.0 million in aggregate (the Equity Premium), and the remaining $34.0 million was recorded as an issuance of common stock in shareholders' equity.

In addition, under the Stock Purchase Agreement, the Company had the right to require JJDC purchase an aggregate of $50.0 million in shares of the Company's common stock in a private placement at the same price per share as that paid by investors in a public offering. In June 2020, in connection with the Company's June 2020 public offering, the Company exercised this right and JJDC purchased in a private placement 1.8 million shares of the Company's common stock at a price of $28.31 per share, for aggregate proceeds of $50.0 million.

Janssen may terminate the Janssen Agreement with respect to one or more Janssen Cancer Targets, or in its entirety, at any time on or after the second anniversary of the Effective Date, and the Company may terminate the Janssen Agreement with respect to a particular Janssen Cancer Target if a Collaboration Candidate has not been selected for IND-enabling studies for such Janssen Cancer Target within specified time periods under certain conditions. The Janssen Agreement contains customary provisions for termination by either party in the event of a material breach of the Janssen Agreement, subject to cure, by the other party and in the event of any bankruptcy, insolvency or similar events with respect to the other party.

The Company applied ASC 808, *Collaborative Arrangements* (ASC 808) and determined the Janssen Agreement is applicable to such guidance. The Company concluded that Janssen represented a customer and applied relevant guidance from ASC 606, *Revenue from Contracts with Customers* (ASC 606) to evaluate the appropriate accounting for the Janssen Agreement. In accordance with this guidance, the Company identified its potential performance obligations, including its grant of a license to Janssen to certain of its intellectual property subject to certain conditions, its conduct of research and development services, and its participation in various joint oversight committees. The Company determined that its grant of a license to Janssen to certain of its intellectual property subject to certain conditions was not distinct from other performance obligations because such grant is dependent on the conduct and results of the research and development services. Accordingly, the Company determined that its grant of a license to Janssen and its conduct of research and development services should be accounted for as one combined performance obligation, and that the combined performance obligation is transferred over the expected term of the conduct of the research and development services, which is estimated to be four years. Additionally, the Company determined that participation in the various joint oversight committees did not constitute a performance obligation as the Company's participation in the various joint oversight committees does not transfer a service.

The Company also assessed the effects of any variable elements under the Janssen Agreement. Such assessment evaluated, among other things, the funding to be received by the Company for its conduct of research and development services. Based on its assessment, the Company concluded that the total amount to be received by the Company for its conduct of research and development services is variable and cannot be readily estimated and, therefore, no amounts associated with such services were included in the initial transaction price. In addition, the Company also assessed its likelihood of receiving (i) preclinical milestones, (ii) various clinical, regulatory and commercial milestone payments, and (iii) royalties on net sales of the Collaboration Candidates. Based on the likelihood of receiving such milestone payments and royalties, no amounts associated with milestones or royalties were included in the initial transaction price.

In accordance with ASC 606, the Company determined that the initial transaction price under the Janssen Agreement equals $66.0 million, consisting of the upfront, non-refundable and non-creditable payment of $50.0 million and the Equity Premium of $16.0 million. The Company concluded that there was not a significant financing component under the Janssen Agreement. The upfront payment of $66.0 million was recorded as deferred revenue and is being recognized as revenue consistent with the Company's efforts related to the conduct of research and development services, as the research and development services are the primary component of the combined performance obligation. Since the total amount to be received by the Company for its research and development services under the Janssen Agreement could not be readily estimated, revenue associated with the upfront payment will be recognized based on actual headcount utilized as a percentage of total headcount expected to be utilized over the expected term of the conduct of the research and development services. Revenue associated with the research and development services will be recognized in an amount equal to the actual costs incurred during the period in which the research and development services are performed by the Company.

As a direct result of the Company's entry into the Janssen Agreement, the Company incurred $13.3 million in sublicense fees to certain of its existing licensors. The $13.3 million in sublicense consideration represents an asset under ASC 340, *Other Assets and Deferred Costs* (ASC 340) and is amortized to research and development expense ratably with the Company's revenue recognition under the Janssen Agreement. During the year ended December 31, 2020, the Company recognized $1.3 million of such expense. As of December 31, 2020, the Janssen Agreement contract asset balance was $12.0 million.

The Company recognized revenue of $16.8 million under the Janssen Agreement for the year ended December 31, 2020. Such revenue comprised $10.3 million associated with research and development services and $6.5 million associated with the upfront fee and Equity Premium for the year ended December 31, 2020. As of December 31, 2020, aggregate deferred revenue related to the Janssen Agreement was $59.5 million, of which $16.3 million is classified as current.

As of December 31, 2020, the Company has received $4.8 million in cash in aggregate research and development fees from Janssen. As of December 31, 2020, the Company's entire accounts receivable balance comprised amounts owed from Janssen.

**Ono Collaboration and Option Agreement**

On September 14, 2018, the Company entered into a Collaboration and Option Agreement (the Ono Agreement) with Ono Pharmaceutical Co. Ltd. (Ono) for the joint development and commercialization of two off-the-shelf iPSC-derived chimeric antigen receptor (CAR) T-cell product candidates. The first off-the-shelf, iPSC-derived CAR T-cell candidate (Candidate 1) targets an antigen expressed on certain lymphoblastic leukemias, and the second off-the-shelf, iPSC-derived CAR T-cell candidate (Candidate 2) targets a novel antigen identified by Ono expressed on certain solid tumors (each a Candidate and collectively the Candidates).

On December 4, 2020, the Company and Ono entered into a letter agreement (the Ono Letter Agreement) in connection with the Ono Agreement. Pursuant to the Ono Letter Agreement, Ono delivered to the Company proprietary antigen binding domains targeting an antigen expressed on certain solid tumors and nominated such antigen binding domains as the Ono Antigen Binding Domain for incorporation into Collaboration Candidate 2. In connection with such nomination and pursuant to the original agreement, in December 2020, Ono paid the Company a milestone fee of $10.0 million for further research and development of Collaboration Candidate 2 and Ono maintains its option to this candidate. In addition, in connection with the Ono Letter Agreement, Fate and Ono agreed to the termination of the Ono Agreement with respect to Collaboration Candidate 1. Fate retains all rights, in its sole discretion, to research, develop and commercialize Collaboration Candidate 1 throughout the world without any obligation to Ono.

Pursuant to the Ono Agreement, the Company and Ono are jointly conducting research and development activities under a joint development plan, with the goal of advancing Candidate 2 to a pre-defined preclinical milestone. The Company has granted to Ono, during a specified period of time, an option to obtain an exclusive license under certain intellectual property rights to develop and commercialize Candidate 2 in all territories of the world, with the Company retaining the right to co-develop and co-commercialize Candidate 2 in the United States and Europe under a joint arrangement whereby it is eligible to share at least 50% of the profits and losses (the Option).

The Option will expire upon the earliest of: (a) the achievement of the pre-defined preclinical milestone, (b) termination by Ono of research and development activities for the Candidate and (c) the date that is the later of (i) four years after the Effective Date and (ii) completion of all applicable activities contemplated under the joint development plan (the Option Period). The Company has maintained worldwide rights of manufacture for Candidate 2.

Under the terms of the Ono Agreement, Ono paid the Company an upfront, non-refundable and non-creditable payment of $10.0 million in connection with entering into the agreement. Additionally, as consideration for the Company's conduct of research and preclinical development under a joint development plan, Ono pays the Company annual research and development fees set forth in the annual budget included in the joint development plan, which fees are estimated to be $20.0 million in aggregate over the course of the joint development plan.

Further, under the terms of the Ono Agreement, Ono has agreed to pay the Company up to an additional $20.0 million, subject to the exercise by Ono of the Option (Option Exercise Fees) during the Option Period for Candidate 2. Such fees are in addition to the upfront payment research and development fees, and the previously paid $10.0 milestone associated with the Ono Letter Agreement.

Subject to Ono's exercise of the Option and to the achievement of certain clinical, regulatory and commercial milestones (Milestones) with respect to the Candidate in specified territories, the Company is entitled to receive an aggregate of up to $885.0 million in additional milestone payments for Candidate 2, with the applicable milestone payments for Candidate 2 for the United States and Europe subject to reduction by 50% if the Company elects to co-develop and co-commercialize Candidate 2 as described above. The Company is also eligible to receive tiered royalties (Royalties) ranging from the mid-single digits to the low-double digits based on annual net sales by Ono for Candidate 2 in specified territories, with such royalties subject to certain reductions.

No milestone payments specific to Candidate 1 are payable under the Ono Agreement, given the termination of such candidate under the agreement.

The Ono Agreement will terminate with respect to a Candidate if Ono does not exercise its Option for a Candidate within the Option Period, or in its entirety if Ono does not exercise any of its Options for the Candidates within their respective Option Periods. In addition, either party may terminate the Ono Agreement in the event of breach, insolvency or patent challenges by the other party; provided, that Ono may terminate the Ono Agreement in its sole discretion (x) on a Candidate-by-Candidate basis at any time after the second anniversary of the effective date of the Ono Agreement or (y) on a Candidate-by-Candidate or country-by-country basis at any time after the expiration of the Option Period, subject to certain limitations. The Ono Agreement will expire on a Candidate-by-Candidate and country-by-country basis upon the expiration of the applicable royalty term, or in its entirety upon the expiration of all applicable payment obligations under the Ono Agreement.

The Company applied ASC 808 to the Ono Agreement and Ono Letter Agreement and determined that the agreements are applicable to such guidance. The Company concluded that Ono represented a customer and applied relevant guidance from ASC 606 to evaluate the appropriate accounting for the Ono Agreement and the Ono Letter Agreement. In accordance with this guidance, the Company identified its performance obligations, including its grant of a license to Ono to certain of its intellectual property subject to certain conditions, its conduct of research services, and its participation in a joint steering committee. The Company determined that its grant of a license to Ono to certain of its intellectual property subject to certain conditions was not distinct from other performance obligations because such grant is dependent on the conduct and results of the research services. Additionally, the Company determined that its conduct of research services was not distinct from other performance obligations since such conduct is dependent on the guidance of the joint steering committee. Accordingly, the Company determined that all performance obligations should be accounted for as one combined performance obligation, and that the combined performance obligation is transferred over the expected term of the conduct of the research services, which is estimated to be four years. The termination of Candidate 1 under the Ono Agreement did not impact this assessment.

The Company also assessed, in connection with the upfront, non-refundable and non-creditable payment of $10.0 million received in September 2018 and the $5.0 million prepayment of the first-year research and development fees in October 2018 and concluded that there was not a significant financing component to the Ono Agreement.

The Company also assessed the effects of any variable elements under the Ono Agreement. Such assessment evaluated, among other things, the likelihood of receiving (i) preclinical milestone and option fees, (ii) various clinical, regulatory and commercial milestone payments, and (iii) royalties on net sales of either product Candidate. Based on its assessment, the Company concluded that, based on the likelihood of these variable components occurring, there was not a significant variable element included in the transaction price. Accordingly, the Company has not assigned a transaction price to any Ono Option Milestone, Ono Milestones or Ono Option Exercise Fees, other than the $10.0 million milestone triggered as part of the Ono Letter Agreement in December 2020, given the substantial uncertainty related to their achievement and has not assigned a transaction price to any Ono Royalties.

In accordance with ASC 606, the Company determined that the initial transaction price under the Ono Agreement equals $30.0 million, consisting of the upfront, non-refundable and non-creditable payment of $10.0 million and the aggregate estimated research and development fees of $20.0 million. The upfront payment of $10.0 million was recorded as deferred revenue and is being recognized as revenue over time in conjunction with the Company's conduct of research services as the research services are the primary component of the combined performance obligations. Revenue associated with the upfront payment will be recognized based on actual costs incurred as a percentage of the estimated total costs expected to be incurred over the expected term of conduct of the research services. The Company recorded the $5.0 million prepayment of the first-year research and development fees as deferred revenue, and such fees were recognized as revenue as the research services were delivered.

In accordance with ASC 606, the Company concluded that the $10.0 million milestone payment associated with the Ono Letter Agreement represented an increase in the initial transaction price under the Ono Agreement in the form of the receipt of variable consideration that was previously constrained. The milestone payment of $10.0 million was recorded to deferred revenue for the proportional percentage of remaining costs to be incurred under the Ono Agreement as a percentage of the estimated total costs expected to be incurred over the expected term of conduct of the research services and is being recognized as revenue over the expected term in conjunction with the Company's conduct of research services as the research services are the primary component of the combined performance obligations. The Company recognized revenue associated with the milestone payment for the proportional percentage of actual costs incurred under the Ono Agreement as a percentage of the estimated total costs expected to be incurred over the expected term of conduct of the research services.

As a direct result of the Company's entry into the Ono Agreement and the Ono Letter Agreement, the Company incurred an aggregate of $4.0 million in sublicense consideration to existing licensors of the Company. The $4.0 million in sublicense consideration represents an asset under ASC 340 and is being amortized to research and development expense ratably with the Company's revenue recognition under the Ono Agreement. During the years ended December 31, 2020 and 2019, the Company recognized $1.8 million and $0.6 million, respectively, of such expense. As of December 31, 2020, the Ono Agreement contract asset had a balance of $1.5 million.

The Company recognized revenue of $14.6 million, $9.3 million, and $0.6 million under the Ono Agreement and Ono Letter Agreement during the years ended December 31, 2020, 2019 and 2018, respectively. Such revenue comprised $6.1 million associated with the Ono Letter Agreement milestone earned in December 2020, $5.7 million associated with research services and $2.8 million associated with the upfront payment during the year ended December 31, 2020. Such revenue comprised $6.2 million associated with research services and $3.1 million associated with the upfront payment during the year ended December 31, 2019, and $0.4 million associated with research services and $0.2 million associated with the upfront payment during the year ended December 31, 2018. As of December 31, 2020, aggregate deferred revenue related to the Ono Agreement and Ono Letter Agreement was $7.7 million, of which $4.8 million is classified as current.

As of December 31, 2020, the Company has received $12.3 million in cash of aggregate research and development fees from Ono.

**Juno Collaboration and License Agreement**

On May 4, 2015, the Company entered into a strategic research collaboration and license agreement (the Juno Agreement) with Juno Therapeutics, Inc. (Juno) to screen for and identify small molecules that enhance the therapeutic properties of Juno's genetically-engineered T-cell immunotherapies. The four-year initial research term under the Juno Agreement concluded as scheduled on May 4, 2019, and the overall agreement was terminated upon the receipt of the last quarterly research payment of $0.2 million, which occurred in May 2019.

The Company applied ASC 606 to evaluate the appropriate accounting for the Juno Agreement. In accordance with this guidance, the Company identified its performance obligations, including its grant of an exclusive worldwide license to certain of its intellectual property subject to certain conditions, its conduct of research services and its participation in a joint research committee.

No revenue was recognized under the Juno Agreement during the year ended December 31. 2020. Total revenue recognized under the Juno Agreement during the year ended December 31, 2019 was $1.4 million, which comprised $0.7 million associated with the upfront fee and equity premium, and $0.7 million associated with research services. Total revenue recognized under the Juno Agreement for the year ended December 31, 2018 was $4.1 million, which comprised $2.1 million associated with the upfront fee and the equity premium and $2.0 million associated with research services.

**Memorial Sloan Kettering Cancer Center License Agreement**

On May 15, 2018, the Company entered into an Amended and Restated Exclusive License Agreement (the Amended MSK License) with Memorial Sloan Kettering Cancer Center (MSK). The Amended MSK License amends and restates the Exclusive License Agreement entered into between the Company and MSK on August 19, 2016 (the Original MSK License), pursuant to which the Company entered into an exclusive license agreement with MSK for rights relating to compositions and methods covering iPSC-derived cellular immunotherapy, including T-cells and NK-cells derived from iPSCs engineered with CARs.

Pursuant to the Amended MSK License, MSK granted to the Company additional licenses to certain patents and patent applications relating to new CAR constructs and off-the-shelf CAR T cells, including the use of clustered regularly interspaced short palindromic repeat (CRISPR) and other innovative technologies for their production, in each case to research, develop, and commercialize licensed products in the field of all human therapeutic uses worldwide. The Company has the right to grant sublicenses to certain licensed rights in accordance with the terms of the Amended MSK License, in which case it is obligated to pay MSK a percentage of certain sublicense income received by the Company.

The Company issued 500,000 shares of the Company's common stock to MSK (the MSK Shares) and, in return, MSK returned its entire interest in Tfinity Therapeutics, Inc. (Tfinity) to the Company. As a result, as of the effective date of the Amended MSK License, Tfinity is a wholly-owned subsidiary of the Company. The MSK Shares were issued pursuant to an exemption from registration under the Securities Act of 1933, as amended (the Securities Act), in reliance on Section 4(a)(2) of the Securities Act regarding transactions by an issuer not involving a public offering. Additionally, the Company paid an upfront fee of $0.5 million.

During the year ended December 31, 2018, the Company recognized an aggregate of $5.3 million of research and development expenses, consisting of the $0.5 million upfront cash payment to MSK and the issuance of the MSK Shares, valued at $4.8 million, associated with the Amended MSK License.

The Company is obligated to pay to MSK an annual license maintenance fee during the term of the agreement, and milestone payments upon the achievement of specified clinical, regulatory and commercial milestones for licensed products as well as royalty payments on net sales of licensed products

In the event a licensed product achieves a specified clinical milestone, MSK is then eligible to receive certain milestone payments totaling up to $75.0 million based on the price of the Company's common stock, where the amount of such payments owed to MSK is contingent upon certain increases in the price of the Company's common stock following the date of achievement of such clinical milestone. These payments are based on common stock price multiples, with the numerator being the fair value of the ten-trading day trailing average closing price of the Company's common stock and the denominator being the ten-trading day trailing average closing price of the Company's common stock as of the effective date of the Amended MSK License, adjusted for any stock splits, cash dividends, stock dividends, other distributions, combinations, recapitalizations, or similar events. Under the terms of the Amended MSK License, upon a change of control of the Company, in certain circumstances, the Company may be required to pay a portion of these payments to MSK based on the price of the Company's common stock in connection with such change of control.

The following table summarizes the common stock multiples and the stock price appreciation milestone payments, none of which have been triggered as of December 31, 2020:

| | | | | | | |
|---|---|---|---|---|---|---|
| Common stock multiple | | 5.0x | | 10.0x | | 15.0x |
| Ten-trading day trailing average common stock price | $ | 50.18 | $ | 100.36 | $ | 150.54 |
| Stock price appreciation milestone payment (in millions) | $ | 20.0 | $ | 30.0 | $ | 25.0 |

To determine the estimated fair value of the stock price appreciation milestones, the Company uses a Monte Carlo simulation methodology which models future Company common stock prices based on the current stock price and several key variables. The following variables were incorporated in the calculation of the estimated fair value of the stock price appreciation milestones as of December 31, 2020:

| | Year Ended December 31, 2020 |
|---|---|
| Risk-free interest rate | 1.5% |
| Expected volatility | 78.1% |
| Estimated term (in years) | 18.0 |
| Closing stock price as of measurement date | $ 90.93 |

The key inputs to the Monte Carlo simulation to determine the fair value of the stock price appreciation milestones include the Company's stock price as of the measurement date; the estimated term which is based in part on the last valid patent claim date; the expected volatility of the Company's common stock, estimated using the Company's historical common stock volatility as of the remeasurement date; and the risk-free rate based on the U.S. Treasury yield for the estimated term determined. Fair value measurements are highly sensitive to changes in these inputs and significant changes could result in a significantly higher or lower fair value and resulting expense or gain.

As the stock price appreciation milestones are first contingent upon the achievement of a specified clinical milestone, the Company estimates the fair value of the stock price appreciation milestones based on the probability of achieving the clinical milestone. This assessment is based on several factors including the successful achievement of technological, manufacturing, and regulatory requirements.

At each balance sheet date, the Company remeasures the fair value of the stock price appreciation milestones, with changes in fair value recognized as a component of other income (expense) in the consolidated statements of operations and comprehensive loss. Amounts are included in current or non-current liabilities based on the estimated timeline associated with the individual potential payments. During the year ended December 31, 2020, the Company recorded $47.7 million of expense associated with the change in fair value of the stock price appreciation milestones. As of December 31, 2020, the Company recorded a liability of $47.7 million associated with the stock price appreciation milestones for the Amended MSK License.

To date, no licensed products have achieved the specified clinical milestone, and no stock price appreciation milestone payments are currently owed to MSK.

**Gladstone License Agreement**

On September 11, 2018, the Company entered into an exclusive license agreement (the Gladstone License Agreement) with the J. David Gladstone Institutes (Gladstone).

Pursuant to the Gladstone License Agreement, Gladstone granted to the Company exclusive licenses to certain patents and patent applications (the Patent Rights) for the research, development, manufacturing, and commercialization of human therapeutics derived from iPSCs. The Patent Rights cover the use of the CRISPR and engineered nuclease-deactivated CRISPR-associated protein-9 (dCas9) system, known as the CRISPR activation (CRISPRa) system, for cellular reprogramming and iPSC generation.

In consideration for the rights granted under the Gladstone License Agreement, the Company issued to Gladstone 100,000 shares of the Company's common stock (the Gladstone Shares). The Gladstone Shares were issued pursuant to an exemption from registration under the Securities Act, in reliance on Section 4(a)(2) of the Securities Act regarding transactions by an issuer not involving a public offering.

Additionally, the Company paid Gladstone an upfront fee of $0.1 million and is obligated to pay Gladstone milestone payments in an aggregate amount of up to approximately $1.9 million upon the achievement of specified clinical, regulatory and commercial milestones as well as tiered royalties in the low single digits on net sales of human therapeutic products covered by the Patent Rights. The Company is also obligated to pay Gladstone a tiered percentage in the low- to mid-single digits of certain income received by the Company in connection with the sublicense of the Patent Rights.

During the year ended December 31, 2018, the Company recognized an aggregate of $1.4 million of research and development expenses, consisting of the $0.1 million upfront cash payment to Gladstone and the issuance of the Gladstone Shares, valued at $1.3 million, associated with the Gladstone License Agreement.

**3. California Institute for Regenerative Medicine Award**

On April 5, 2018, the Company executed an award agreement with the California Institute for Regenerative Medicine (CIRM) pursuant to which CIRM awarded the Company $4.0 million to advance the Company's FT516 product candidate into a first-in-human clinical trial for the treatment of subjects with advanced solid tumors, including in combination with monoclonal antibody therapy (the Award). Pursuant to the terms of the Award, the Company is eligible to receive five disbursements in varying amounts totaling $4.0 million, with one disbursement receivable upon the execution of the Award, and four disbursements receivable upon the completion of certain milestones throughout the project period. The Award is subject to certain co-funding requirements by the Company, and the Company is required to provide CIRM progress and financial update reports under the Award.

Pursuant to the terms of the Award, the Company, in its sole discretion, has the option to treat the Award either as a loan or as a grant. In the event the Company elects to treat the Award as a loan, the Company will be obligated to repay i) 60%, ii) 80%, iii) 100% or iv) 100% plus interest at 7% plus LIBOR, of the total Award to CIRM, where such repayment rate is dependent upon the phase of clinical development of FT516 at the time of the Company's election. If the Company does not elect to treat the Award as a loan within 10 years of the date of the Award, the Award will be considered a grant and the Company will be obligated to pay to CIRM a royalty on commercial sales of FT516 until such royalty payments equal nine times the total amount awarded to the Company under the Award.

Since the Company may, at its election, repay some or all of the Award, the Company accounts for the Award as a liability until the time of election. As of December 31, 2020, the Company has received all disbursements available under the Award in the amount of $4.0 million. The aggregate amount received is recorded as a CIRM Liability on the accompanying consolidated balance sheets and classified as current or non-current based on the potential amount payable within twelve months of the current balance sheet date.

**4. Investments**

The Company invests portions of excess cash in United States treasuries, commercial paper, non-U.S. government securities, municipal securities, and corporate debt securities with maturities ranging from three to eighteen months from the purchase date. These investments are accounted for as available-for-sale securities and are classified as short-term and long-term investments in the accompanying consolidated balance sheets based on each security's contractual maturity date.

The following table summarizes the Company's investments accounted for as available-for-sale securities as of December 31, 2020 and 2019 (in thousands):

| | Maturity (in years) | Amortized Cost | Unrealized Losses | Unrealized Gains | Estimated Fair Value |
|---|---|---|---|---|---|
| **December 31, 2020** | | | | | |
| Classified as current assets: | | | | | |
| U.S. Treasury debt securities | 1 or less | $ 39,736 | $ — | $ 31 | $ 39,767 |
| Non-U.S. government securities | 1 or less | 5,054 | — | 2 | $ 5,056 |
| Municipal securities | 1 or less | 3,082 | (1) | — | $ 3,081 |
| Corporate debt securities | 1 or less | 159,947 | (68) | 124 | $ 160,003 |
| Commercial paper | 1 or less | 107,680 | (18) | — | $ 107,662 |
| Total short-term investments | | $ 315,499 | $ (87) | $ 157 | $ 315,569 |
| | | | | | |
| **December 31, 2019** | | | | | |
| Classified as current assets: | | | | | |
| U.S. Treasury debt securities | 1 or less | $ 50,445 | $ (4) | $ 16 | $ 50,457 |
| Corporate debt securities | 1 or less | 71,171 | (24) | 9 | 71,156 |
| Total short-term investments | | $ 121,616 | $ (28) | $ 25 | $ 121,613 |
| Classified as non-current assets: | | | | | |
| U.S. Treasury debt securities | Greater than 1 | $ 9,841 | $ — | $ 5 | $ 9,846 |
| Corporate debt securities | Greater than 1 | 29,572 | (1) | 23 | 29,594 |
| Total long-term investments | | $ 39,413 | $ (1) | $ 28 | $ 39,440 |

As of December 31, 2020 and 2019, the Company had $1.5 million and $1.0 million, respectively, of accrued interest on investments recorded in prepaid expenses and other assets on the consolidated balance sheets.

The Company reviews its investment holdings at the end of each reporting period and evaluates any unrealized losses using the expected credit loss model to determine if the unrealized loss is a result of a credit loss or other factors. The Company also evaluates its investment holdings for impairment using a variety of factors including the Company's intent to sell the underlying securities prior to maturity and whether it is more likely than not that the Company would be required to sell the securities before the recovery of their amortized basis. During the years ended December 31, 2020, 2019 and 2018, the Company did not recognize any impairment or realized gains or losses on sales of investments, and the Company did not record an allowance for, or recognize, any expected credit losses.

**5. Fair Value Measurements**

The following tables presents the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2020 and 2019 (in thousands):

| | | Fair Value Measurements at Reporting Date Using | | |
|---|---|---|---|---|
| | Total | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| **As of December 31, 2020:** | | | | |
| Financial assets: | | | | |
| Money market funds | $ 167,347 | $ 167,347 | $ — | $ — |
| U.S. Treasury debt securities | 39,767 | 39,767 | — | — |
| Non-U.S. government securities | 5,056 | — | 5,056 | — |
| Municipal securities | 3,081 | — | 3,081 | — |
| Corporate debt securities | 160,003 | — | 160,003 | — |
| Commercial paper | 107,662 | — | 107,662 | — |
| Total assets measured at fair value on a recurring basis | $ 482,916 | $ 207,114 | $ 275,802 | $ — |
| Financial liabilities: | | | | |
| Stock price appreciation milestones | $ 47,702 | $ — | $ — | $ 47,702 |
| Total financial liabilities measured at fair value on a recurring basis | $ 47,702 | $ — | $ — | $ 47,702 |
| **As of December 31, 2019:** | | | | |
| Financial assets: | | | | |
| Money market funds | $ 84,814 | $ 84,814 | $ — | $ — |
| U.S. Treasury debt securities | 60,303 | 60,303 | — | — |
| Corporate debt securities | 100,750 | — | 100,750 | — |
| Total financial assets measured at fair value on a recurring basis | $ 245,867 | $ 145,117 | $ 100,750 | $ — |

Level 1 assets consisted of money market funds and U.S. Treasury securities measured at fair value based on quoted prices in active markets as provided by the Company's investment managers.

Level 2 assets consisted of corporate debt securities, commercial paper, municipal securities, and non-U.S. government securities measured at fair value using standard observable inputs, including reported trades, broker/dealer quotes, and bids and/or offers. The Company validates the quoted market prices provided by its investment managers by comparing the investment managers' assessment of the fair values of the Company's investment portfolio balance against the fair values of the Company's investment portfolio balance obtained from an independent source.

There were no Level 3 assets held by the Company as of December 31, 2020.

Level 3 liabilities consisted of stock price appreciation milestones associated with the Amended MSK License as described in detail in Note 2. To determine the estimated fair value of the stock price appreciation milestones, the Company uses a Monte Carlo simulation methodology which models future Company common stock prices based on several key variables. The assumptions used to calculate the fair value of the stock price appreciation milestones are subject to a significant amount of judgment including the expected volatility of the Company's common stock and estimated term, which is based in part on the last valid patent claim date. Fair value measurements are highly sensitive to changes in these inputs and significant changes could result in a significantly higher or lower fair value and resulting expense or gain. Further, as the stock price appreciation milestones are first contingent upon the achievement of a specified clinical milestone, the Company also estimates the fair value of the stock price appreciation milestones based on the probability of achieving the clinical milestone. This assessment is based on several factors including the successful achievement of technological, manufacturing, and regulatory requirements.

A small change in the assumptions and other inputs, such as the price of the Company's common stock, may have a relatively large change in the estimated fair value of the stock price appreciation milestones and associated liability and expense. For example, keeping all other variables constant, a hypothetical 10% increase in the stock price at December 31, 2020 from $90.93 to $100.02 per share would have increased the expense recorded during 2020 by $2.4 million related to the stock price appreciation milestones. Keeping all other variables constant, a hypothetical 10% decrease in the stock price at December 31, 2020 from $90.93 to $81.84 per share would have decreased the expense recorded during 2020 by $2.6 million related to the stock price appreciation milestones.

The following table presents the changes in fair value of the Company's Level 3 stock price appreciation milestones liability (in thousands):

| | |
|---|---|
| Balance at December 31, 2019 | $ — |
| Changes in fair value of stock price appreciation milestones liability | 47,702 |
| Balance at December 31, 2020 | $ 47,702 |

None of the Company's non-financial assets or liabilities are recorded at fair value on a non-recurring basis. No transfers between levels have occurred during the periods presented.

## 6. Property and Equipment

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

| | December 31, | |
|---|---|---|
| | 2020 | 2019 |
| Furniture and fixtures | $ 803 | $ 899 |
| Computer and office equipment | 656 | 917 |
| Software | 257 | 103 |
| Leasehold improvements—building | 2,701 | 2,465 |
| Scientific equipment | 20,794 | 15,355 |
| Construction-in-process | 18,192 | 198 |
| Total property and equipment, gross | 43,403 | 19,937 |
| Less accumulated depreciation and amortization | (11,095) | (8,518) |
| Total property and equipment, net | $ 32,308 | $ 11,419 |

Depreciation expense related to property and equipment was $3.1 million, $2.2 million, and $1.2 million, for the years ended December 31, 2020, 2019, and 2018, respectively. No material gains or losses on the disposal of property and equipment have been recorded for the years ended December 31, 2020, 2019, and 2018.

## 7. Accrued Expenses and Long-Term Debt

### Accrued Expenses

Current accrued expenses consist of the following (in thousands):

| | December 31, | |
|---|---|---|
| | 2020 | 2019 |
| Accrued payroll and other employee benefits | $ 4,815 | $ 5,329 |
| Accrued clinical trial related costs | 5,244 | 5,976 |
| Accrued other | 5,505 | 3,392 |
| Total current accrued expenses | $ 15,564 | $ 14,697 |

**Long-Term Debt**

*Silicon Valley Bank Debt Facilities*

In 2009, the Company entered into a Loan and Security Agreement with Silicon Valley Bank, which was collateralized by substantially all of the Company's assets excluding certain intellectual property. This Loan and Security Agreement was subsequently amended in 2014 and 2017. In November 2019, the Company repaid in full all outstanding obligations under the Loan and Security Agreement, as amended. The Company used cash on hand in the amount of $14.2 million for the repayment of such obligations, including the repayment of $13.0 million in principal and $1.2 million associated with the final fee and outstanding interest.

For the years ended December 31, 2019 and 2018, the Company recorded $1.8 million and $1.7 million respectively, in aggregate interest expense related to the Loan and Security Agreement.

**8. Leases**

The Company has lease agreements for office, laboratory and manufacturing spaces that are classified as operating leases on the consolidated balance sheets. These leases have terms varying from one to approximately sixteen years, with renewal options of up to ten years, as well as early termination options. Extension and termination options are included in the total lease term when the Company is reasonably certain to exercise them. The leases are subject to additional variable charges, including common area maintenance, property taxes, property insurance and other variable costs. Given the variable nature of such costs, they are recognized as expense as incurred. Additionally, some of the Company's leases are subject to certain fixed fees which the Company has determined to be non-lease components. The Company has elected to combine and account for lease and non-lease components as a single lease component for purposes of determining the total future lease payments.

In January 2020, the Company entered into a lease agreement for certain office, laboratory and manufacturing spaces (the Premises), and such lease is accounted for as an operating lease. The Premises are located in San Diego, California and the Company intends to move its corporate headquarters to the Premises in the middle of 2021. Lease payments shall commence, subject to certain conditions, in May 2021 (the Rent Commencement Date) and the lease has a lease term of 15 years starting from the Rent Commencement Date. The Company has the option to extend the lease for two successive five-year periods. The Company also has a one-time option to terminate the lease after 10 years from the Rent Commencement Date, subject to payment of a $30.0 million early termination fee. The landlord of the Premises is obligated to contribute an aggregate of up to $29.8 million toward tenant improvements of the Premises. As of December 31, 2020, the Company had utilized $18.2 million associated with the tenant improvements allowance and expects the remainder of the tenant improvements to be utilized within the next six months. In connection with the lease, the Company maintains a letter of credit for the benefit of the landlord in an amount equal to $15.0 million, which amount is subject to reduction over time.

As of December 31, 2020, future undiscounted minimum contractual payments under the Company's operating leases were $194.0 million, which will be paid over a remaining weighted-average lease term of 13.3 years. The weighted-average discount rate for the operating lease liabilities was 8.4%, which was the Company's incremental borrowing rate at lease commencement, as the discount rates implicit in the leases could not be readily determined.

The components of lease expense for the years ended December 31, 2020 and 2019 were as follows (in thousands):

| | Years Ended December 31, | |
|---|---|---|
| | 2020 | 2019 |
| Straight-line lease expense | $ 12,076 | $ 3,781 |
| Variable lease expense | 2,245 | 2,330 |
| Total operating lease expense | $ 14,321 | $ 6,111 |

Total short-term lease expense associated with short-term leases for the years ended December 31, 2020 and 2019 was $1.2 million and $1.1 million, respectively.

For the year ended December 31, 2018, aggregate contractual rent expense was $2.3 million.

Future undiscounted minimum payments under the Company's operating leases as of December 31, 2020 are as follows (in thousands):

| | Operating Lease Payments |
|---|---|
| Years Ending December 31, | |
| 2021 | $ 10,824 |
| 2022 | 12,610 |
| 2023 | 12,988 |
| 2024 | 13,378 |
| 2025 | 13,779 |
| Thereafter | 130,447 |
| Total undiscounted lease payments | $ 194,026 |
| Less: imputed interest | (85,247) |
| Less: amounts associated with tenant improvement allowance not yet utilized | (11,481) |
| Total lease liability | $ 97,298 |

**9. Convertible Preferred Stock and Stockholders' Equity**

**Convertible Preferred Stock**

In November 2016, the Company completed a private placement of stock in which investors, including investors affiliated with the directors and officers of the Company, purchased convertible preferred stock and common stock of the Company (the November 2016 Placement). The Company issued 2,819,549 shares of non-voting Class A Convertible Preferred Stock (the Class A Preferred) at $13.30 per share, each of which is convertible into five shares of common stock upon certain conditions defined in the Certificate of Designation of Preferences, Rights and Limitations of the Class A Preferred filed with the Delaware Secretary of State on November 22, 2016 (the CoD). The Class A Preferred were purchased exclusively by entities affiliated with Redmile Group, LLC (collectively, Redmile). The terms of the CoD prohibited Redmile from converting the Class A Preferred into shares of the Company's common stock if, as a result of conversion, Redmile, together with its affiliates, would own more than 9.99% of the Company's common stock then issued and outstanding (the Redmile Percentage Limitation), which percentage could change at Redmile's election upon 61 days' notice to the Company to (i) any other number less than or equal to 19.99% or (ii) subject to approval of the Company's stockholders to the extent required in accordance with the NASDAQ Global Market rules, any number in excess of 19.99%. On May 2, 2017, the Company's stockholders approved the issuance of up to an aggregate of 14,097,745 shares of common stock upon the conversion of the outstanding shares of Class A Preferred. As a result, Redmile has the right to increase the Redmile Percentage Limitation to any percentage in excess of 19.99% at its election. The Company also issued 7,236,837 shares of common stock at $2.66 per share as part of the November 2016 Placement.

The Class A Preferred are non-voting shares and have a stated par value of $0.001 per share and are convertible into five shares of the Company's common stock at a conversion price of $2.66 per share, which was the fair value of the Company's common stock on the date of issuance. Holders of the Class A Preferred have the same dividend rights as holders of the Company's common stock. Additionally, the liquidation preferences of the Class A Preferred are *pari passu* among holders of the Company's common stock and holders of the Class A Preferred, pro rata based on the number of shares held by each such holder (treated for this purpose as if the Class A Preferred had been converted to common stock).

During the year ended December 31, 2019, 25,000 shares of the Company's Class A Preferred were converted into 125,000 shares of the Company's common stock.

**Description of Securities**

*Dividends*

As of December 31, 2020, the Board of Directors of the Company has not declared any dividends.

**2013 Stock Option and Incentive Plan, and Inducement Equity Plan**

*2013 Stock Option and Incentive Plan*

On August 28, 2013, the Company's board of directors and stockholders approved and adopted the 2013 Stock Option and Incentive Plan (the 2013 Plan). The 2013 Plan became effective immediately prior to the Company's IPO. The 2013 Plan was subsequently amended in May 2017. Under the 2013 Plan, the Company may grant stock options, stock appreciation rights, restricted stock, restricted stock units and other awards to individuals who are then employees, officers, directors or consultants of the Company or its subsidiaries. A total of 1,020,000 shares of common stock were initially reserved for issuance under the 2013 Plan, and in May 2017, stockholders approved an additional 2,500,000 shares of common stock for issuance under the 2013 Plan. The shares issuable pursuant to awards granted under the 2013 Plan will be authorized, but unissued shares. The shares of common stock underlying any awards from the 2013 Plan and a previously existing equity plan from 2007 that are forfeited, cancelled, held back upon exercise or settlement of an award to satisfy the exercise price or tax withholding, reacquired by us prior to vesting, satisfied without any issuance of common stock, expire or are otherwise terminated (other than by exercise) will be added back to the shares of common stock available for issuance under the 2013 Plan.

In addition, the number of shares of stock available for issuance under the 2013 Plan will be automatically increased each January 1 by 4% of the outstanding number of shares of the Company's common stock on the immediately preceding December 31 or such lesser number as determined by the compensation committee of the Company's board of directors.

Recipients of stock options under the 2013 Plan shall be eligible to purchase shares of the Company's common stock at an exercise price equal to no less than the estimated fair value of such stock on the date of grant. Under the 2013 Plan, stock options generally vest 25% on the first anniversary of the original vesting date, with the balance vesting monthly over the remaining three years, or vest monthly over four years, unless they contain specific performance and/or market-based vesting provisions. The maximum term of stock options granted under the 2013 Plan is ten years. Under the 2013 Plan, restricted stock units generally vest annually over four years.

*Inducement Plan*

On May 10, 2016, the Company's board of directors approved the Fate Therapeutics, Inc. Inducement Equity Plan (the Inducement Plan), the purpose of which is to enable the Company to grant equity awards to induce highly-qualified prospective officers and employees who are not employed by the Company to accept employment with the Company. Under the Inducement Plan, the Company may grant non-qualified stock options and restricted stock units. A total of 500,000 shares of common stock were initially reserved for issuance under the Inducement Plan. In March 2020, January 2019 and January 2018, an additional 470,822 shares, 200,000 shares and 400,000 shares, respectively, of common stock were reserved for issuance under the Inducement Plan. The shares of common stock underlying any awards from the Inducement Plan that are forfeited, cancelled, held back upon exercise or settlement of an award to satisfy the exercise price or tax withholding, reacquired by us prior to vesting, satisfied without any issuance of common stock, expire or are otherwise terminated (other than by exercise) under the Inducement Plan will be added back to the shares of common stock available for issuance under the Inducement Plan.

**Employee Stock Purchase Plan**

On September 13, 2013, the Company's board of directors approved and adopted the 2013 Employee Stock Purchase Plan (the ESPP). A total of 729,000 shares of common stock were initially reserved for issuance under the ESPP. In addition, the number of shares of stock available for issuance under the ESPP will be automatically increased each January 1, beginning on January 1, 2015, by the lesser of (i) 2% of the outstanding number of shares of the Company's common stock on the immediately preceding December 31, (ii) 450,000 shares, or (iii) such lesser number as determined by the compensation committee of the Company's board of directors.

No purchases have been made to date under the ESPP.

**Stock Options and Restricted Stock Unit Awards**

*Stock Options.* The following table summarizes stock option activity and related information under all equity plans for the year ended December 31, 2020:

| | Options | Weighted Average Exercise Price Per Share | Weighted Average Remaining Contractual Term | Aggregate Intrinsic Value (in 000s) |
|---|---|---|---|---|
| Outstanding at December 31, 2019 | 9,327,742 | $ 9.67 | 7.73 | $ 92,567 |
| Granted | 2,756,108 | 29.29 | | |
| Exercised | (1,419,117) | 6.76 | | |
| Cancelled | (231,911) | 15.73 | | |
| Outstanding at December 31, 2020 | 10,432,822 | $ 15.11 | 7.48 | $ 791,000 |
| Options vested and expected to vest at December 31, 2020 | 10,432,822 | $ 15.11 | 7.48 | $ 791,000 |
| Options exercisable at December 31, 2020 | 5,540,840 | $ 9.07 | 6.51 | $ 453,593 |

For the year ended December 31, 2020 and 2019, the weighted average grant date fair value of stock options granted per share was equal to $18.87 and $11.52, respectively. For the year ended December 31, 2018, the weighted average grant date fair value of stock options granted to employees and directors was equal to $8.28.

During the years ended December 31, 2020, 2019 and 2018, the total fair value of stock options vested was $21.0 million, $12.4 million and $5.4 million, respectively.

As of December 31, 2020, 2019 and 2018, the unrecognized compensation cost related to outstanding options was $66.1 million, $40.4 million and $15.9 million, respectively, which was expected to be recognized as expense over approximately 2.9 years, 2.9 years and 3.1 years, respectively.

The total intrinsic value, which is the amount by which the exercise price was exceeded by the price of the Company's common stock on the date of exercise, of stock options exercised during the years ended December 31, 2020, 2019 and 2018, was $59.7 million, $10.7 million, and $5.5 million, respectively. Total cash received upon the exercise of stock options was $9.7 million for the year ended December 31, 2020.

*Restricted Stock Units.* The following table summarizes restricted stock unit activity and related information under all equity plans for the year ended December 31, 2020:

| | Number of Restricted Stock Units | Weighted Average Grant Date Fair Value Per Share | Weighted Average Remaining Vesting Period | Aggregate Intrinsic Value (in 000s) |
|---|---|---|---|---|
| Outstanding at December 31, 2019 | 520,000 | $ 16.41 | 2.64 | $ 10,176 |
| Granted | 1,033,323 | 22.86 | | |
| Vested | (85,000) | 16.34 | | |
| Cancelled | (66,591) | 21.94 | | |
| Outstanding at December 31, 2020 | 1,401,732 | $ 20.91 | 2.64 | $ 127,459 |
| Restricted stock units expected to vest at December 31, 2020 | 1,401,732 | $ 20.91 | 2.64 | $ 127,459 |

During years ended December 31, 2020, 2019 and 2018, the total fair value of restricted stock units vested was $1.9 million, $2.4 million and $0.3 million, respectively.

As of December 31, 2020, 2019 and 2018, the unrecognized compensation cost related to outstanding restricted stock units was $20.8 million, $6.2 million, and $0.4 million respectively, which was expected to be recognized as expense over approximately 2.9 years, 2.7 years, and 0.8 years respectively.

**Stock-Based Compensation Expense**

The allocation of stock-based compensation for all stock awards is as follows (in thousands):

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Research and development | $ 18,636 | $ 9,804 | $ 3,654 |
| General and administrative | 12,117 | 7,606 | 2,639 |
| Total stock-based compensation expense | $ 30,753 | $ 17,410 | $ 6,293 |

*Stock Option Grants Valuation.* As of January 1, 2019, the Company adopted ASU 2018-07, which aligned the guidance on share-based payments to nonemployees with that for share-based payments to employees. In accordance with ASU 2018-07, the measurement of equity-classified nonemployee awards is fixed at the grant date and entities are not required to remeasure nonemployee equity awards at each reporting date until such time that the measurement date is established. The weighted-average assumptions used in the Black-Scholes option pricing model to determine the fair value of the employee and nonemployee stock option grants were as follows:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Risk–free interest rate | 1.0% | 2.4% | 2.5% |
| Expected volatility | 77.5% | 80.1% | 79.3% |
| Expected term (in years) | 5.5 | 6.1 | 6.0 |
| Expected dividend yield | 0.0% | 0.0% | 0.0% |

*Risk-free interest rate.* The Company bases the risk-free interest rate assumption on observed interest rates appropriate for the expected term of the stock option grants.

*Expected dividend yield.* The Company bases the expected dividend yield assumption on the fact that it has never paid cash dividends and has no present intention to pay cash dividends.

*Expected volatility.* During the year ended December 31, 2020, the Company based the expected volatility on the historical volatility of its common stock over the most recent period commensurate with the estimated expected term of the Company's stock options, as the Company determined there was sufficient operating history and company-specific historical volatility to estimate the expected volatility. During the years ended December 31, 2019 and 2018, the expected volatility assumption was based on historical volatilities of a peer group of similar companies whose share prices were publicly available. The peer group was developed based on companies in the biotechnology industry.

*Expected term.* The expected term represents the period of time that options are expected to be outstanding. During the year ended December 31, 2020, the Company estimated the expected term using historical experience and anticipated future exercise behavior. During the years ended December 31, 2019 and 2018, due to limited historical exercise behavior, the Company determined the expected life assumption using the simplified method, which is an average of the contractual term of the option and its vesting period.

**Common Stock Reserved for Future Issuance**

Common stock reserved for future issuance is as follows:

| | December 31, | |
|---|---|---|
| | 2020 | 2019 |
| Convertible preferred stock (if converted) | 13,972,745 | 13,972,745 |
| Common stock options | 10,432,822 | 9,327,742 |
| Restricted stock units | 1,401,732 | 520,000 |
| Awards available under the 2013 Plan | 2,618,516 | 2,880,235 |
| Awards available under the Inducement Plan | 550,000 | 279,178 |
| Employee stock purchase plan | 729,000 | 729,000 |
| Total | 29,704,815 | 27,708,900 |

**10. Income Taxes**

The following is a reconciliation of the Company's expected federal income tax provision (benefit) to the actual income tax provision (in thousands):

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Tax computed at federal statutory rate | $ (36,411) | $ (20,611) | $ (13,985) |
| State tax, net of federal tax benefit | (1,296) | (2,088) | (1,620) |
| Permanent differences | (165) | 175 | 22 |
| Stock compensation | (6,073) | 359 | (307) |
| R&D tax credits | (7,177) | (7,285) | (3,301) |
| Reserve for uncertain tax positions | 1,555 | 2,163 | 1,160 |
| Other | 70 | 77 | 304 |
| Valuation allowance | 49,497 | 27,210 | 17,727 |
| Income tax expense | $ — | $ — | $ — |

Significant components of the Company's deferred tax assets are summarized as follows (in thousands):

| | December 31, | |
|---|---|---|
| | 2020 | 2019 |
| Deferred tax assets: | | |
| Section 59e amortization | $ 48,195 | $ 32,781 |
| Net operating losses | 41,213 | 37,563 |
| R&D tax credits | 23,488 | 16,391 |
| Intangible asset amortization | 2,615 | 1,650 |
| Deferred revenue | 11,915 | 2,115 |
| Stock compensation | 4,307 | 2,346 |
| Lease liability | 20,433 | 5,655 |
| Other | 10,208 | 846 |
| Total deferred tax assets | 162,374 | 99,347 |
| Deferred tax liabilities: | | |
| Depreciation | (4,220) | — |
| Right-of-use assets | (14,088) | (4,778) |
| Total deferred tax liabilities | (18,308) | (4,778) |
| Net of deferred tax assets and liabilities | 144,066 | 94,569 |
| Valuation allowance | (144,066) | (94,569) |
| Net deferred tax assets | $ — | $ — |

A valuation allowance of $144.1 million and $94.6 million at December 31, 2020 and 2019, respectively, has been established to offset the deferred tax assets, as realization of such assets is uncertain.

At December 31, 2020, the Company had federal and California net operating loss (NOL) carryforwards of $186.4 million and $188.0 million, respectively, which may be available to offset future taxable income. Of the federal NOLs, $67.0 million are indefinite lived and are limited to offsetting eighty-percent of taxable income within a fiscal year. The remaining federal and California NOL carryforwards begin to expire in 2027 and 2028, respectively, unless previously utilized. At December 31, 2020, the Company had federal and California research and development (R&D) credit carryforwards of $18.0 million and $12.9 million, respectively. The federal R&D tax credit carryforwards will begin to expire in 2035 unless previously utilized. The California R&D credit carryforwards will carry forward indefinitely.

Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, (the Code), substantial changes in the Company's ownership may limit the amount of net operating loss and research and development credit carryforwards that could be used annually in the future to offset taxable income. The tax benefits related to future utilization of federal and state net operating loss carryforwards, credit carryforwards, and other deferred tax assets may be limited or lost if cumulative changes in ownership exceeds 50% within any three-year period. The Company had previously completed a study to assess whether an ownership change, as defined by Section 382 of the Code, had occurred from the Company's formation through December 31, 2015. Based upon this study, the Company determined that several ownership changes had occurred. Accordingly, the Company reduced its deferred tax assets related to the federal NOL carryforwards and the federal R&D credit carryforwards that are anticipated to expire unused as a result of these ownership changes. These tax attributes were excluded from deferred tax assets with a corresponding reduction of the valuation allowance with no net effect on income tax expense or the effective tax rate. The Company updated the study through December 31, 2020 and concluded there were no ownership changes subsequent to December 31, 2015. Future ownership changes may further limit the Company's ability to utilize its remaining tax attributes.

The Company files income tax returns in the United States and California and has historically filed income tax returns in Canada. The Company currently has no years under examination by any jurisdiction; however, the Company is subject to income tax examination by federal and California tax authorities for years beginning in 2017 and 2016, respectively. However, to the extent allowed by law, the taxing authorities may have the right to examine prior periods where NOLs and tax credits were generated and carried forward, and make adjustments up to the amount of the carryforwards.

The change in the Company's unrecognized tax benefits is summarized as follows (in thousands):

| | December 31, | | |
|---|---|---|---|
| | 2020 | 2019 | 2018 |
| Beginning unrecognized tax benefits | $ 16,822 | $ 13,547 | $ 11,800 |
| Increase related to current year tax positions | 1,837 | 3,196 | 1,798 |
| Increase related to prior year tax positions | 1,120 | 79 | 148 |
| Decrease related to prior year tax positions | — | — | (199) |
| Ending unrecognized tax benefits | $ 19,779 | $ 16,822 | $ 13,547 |

The Company does not anticipate that the amount of unrecognized tax benefits as of December 31, 2020 will significantly change within the next twelve months. Due to the valuation allowance recorded against the Company's deferred tax assets, none of the total unrecognized tax benefits as of December 31, 2020 would reduce the effective tax rate if recognized. The Company has not recognized interest or penalties related to income tax matters in its consolidated statements of operations and comprehensive loss since inception.

**11. Employee Benefits**

Effective January 1, 2009, the Company adopted a defined contribution 401(k) plan for employees who are at least 21 years of age. Employees are eligible to participate in the plan beginning on the first day of the calendar quarter following date of hire. Under the terms of the plan, employees may make voluntary contributions as a percent of compensation. No matching contributions have been made by the Company as of December 31, 2020 since the adoption of the 401(k) plan.

**12. Commitments and Contingencies**

**License Agreements**

The Company has entered into exclusive license agreements with certain academic institutions and universities pursuant to which the Company acquired certain intellectual property. Pursuant to each agreement, as consideration for an exclusive license to the intellectual property, the Company paid a license fee, reimbursed the institution for historical patent costs and, in certain instances, issued the institution shares of restricted common stock. Additionally, under each agreement, the institution is generally eligible to receive future consideration including, but not limited to, annual maintenance fees, royalties, milestone payments and sublicensing fees. Each of the license agreements is generally cancelable by the Company, given appropriate prior written notice. Minimum annual payments to maintain these cancelable licenses total an aggregate of $0.4 million. See Note 2 of the notes to the consolidated financial statements for additional information on certain licenses.

**13. Subsequent Events**

In January 2021, the Company completed a public offering of common stock in which investors, certain of which are affiliated with a director of the Company, purchased an aggregate of 5.1 million shares of the Company's common stock at a price of $85.50 per share under a shelf registration statement. In addition, the Company issued pre-funded warrants, in lieu of common stock to certain investors, to purchase 257,310 shares of the Company's common stock (Pre-Funded Warrants). The purchase price for the Pre-Funded Warrants was $85.499 per Pre-Funded Warrant, which equals the per share public offering price for the shares of common stock less the $0.001 exercise price for each such Pre-Funded Warrant.

The Pre-Funded Warrants are exercisable at any time after the date of issuance. A holder of Pre-Funded Warrants may not exercise the Pre-Funded Warrant if the holder, together with its affiliates, would beneficially own more than 9.99% of the number of shares of the Company's common stock outstanding immediately after giving effect to such exercise. A holder of Pre-Funded Warrants may increase or decrease this percentage not in excess of 19.99% by providing at least 61 days' prior notice to the Company.

Gross proceeds from the offering were $460.0 million. Net proceeds from the offering, after giving effect to underwriting discounts and commissions and estimated expenses related to the offering, are estimated to be approximately $432.1 million.

## 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.** We are responsible for maintaining disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. Disclosure controls and procedures are controls and other procedures designed to ensure that the information required to be disclosed by us in the reports that 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. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including the individual serving as our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable and not absolute assurance of achieving the desired control objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based on our management's evaluation (with the participation of our principal executive officer and principal financial officer) of our disclosure controls and procedures as required by Rules 13a-15 and 15d-15 under the Exchange Act, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2020, the end of the period covered by this report.

**Management's Report on Internal Control over Financial Reporting.** The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act). Internal control over financial reporting is a process designed under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. Management conducted an assessment of the effectiveness of the Company's internal control over financial reporting based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control—Integrated Framework (2013 Framework). Based on this assessment, our management concluded that, as of December 31, 2020, our internal control over financial reporting was effective based on those criteria.

Our independent registered public accounting firm, Ernst & Young LLP, has audited the financial statements included in this Form 10-K and has issued an unqualified opinion on the effectiveness of our internal control over financial reporting as of December 31, 2020, as stated in their attestation report, which is included elsewhere herein.

**Changes in Internal Control over Financial Reporting.** There were no changes in our internal control over financial reporting during the quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Enhancements were made to our existing internal controls over financial reporting, effective during the year ended December 31, 2020, due to the adoption and implementation of the new credit loss reporting requirements under ASU 2016-13. Further, due to the achievement of certain technological, manufacturing and regulatory operating milestones, we have enhanced our existing internal controls over financial reporting associated with the fair value assessment of the stock price appreciation milestones for the Amended MSK License.

## Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Fate Therapeutics, Inc.

**Opinion on Internal Control over Financial Reporting**

We have audited Fate Therapeutics, Inc.'s internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). In our opinion, Fate Therapeutics, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2020 and 2019, the related consolidated statements of operations and comprehensive loss, convertible preferred stock and stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, and the related notes and our report dated February 24, 2021 expressed an unqualified opinion thereon.

**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/ Ernst & Young LLP**

San Diego, CA
February 24, 2021

**ITEM 9B. Other Information**

None.

## PART III

### ITEM 10. Directors, Executive Officers and Corporate Governance

Except as set forth below, the information required by this item is contained in our definitive proxy statement (the Proxy Statement), to be filed with the SEC in connection with the Annual Meeting of Stockholders within 120 days after the conclusion of our fiscal year ended December 31, 2020 and is incorporated in this Annual Report on Form 10-K by reference.

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A current copy of the code is posted on the Corporate Governance section of our website, which is located at www.fatetherapeutics.com. If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for our principal executive officer, principal financial officer, principal accounting officer, controller or persons performing similar functions, or any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

### ITEM 11. Executive Compensation

The information required by this item is contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

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

The information required by this item is contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

### ITEM 13. Certain Relationships and Related Party Transactions, and Director Independence

The information required by this item is contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

### ITEM 14. Principal Accounting Fees and Services

The information required by this item is contained in the Proxy Statement and is incorporated in this Annual Report on Form 10-K by reference.

## PART IV

### ITEM 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this report:

(1) *Index list to Financial Statements:*



(2) *Financial Statement Schedules*

All other schedules are omitted because they are not required or the required information is included in the financial statements or notes thereto.

(3) *Exhibits*

The exhibits listed in the accompanying Exhibit Index are filed or incorporated by reference as part of this report.

### ITEM 16. Form 10-K Summary

None.

## EXHIBIT INDEX

| Exhibit Number | Exhibit Title | Incorporated by Reference | | | |
|---|---|---|---|---|---|
| | | Form | File No. | Exhibit | Filing Date |
| 3.1 | Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect | S-1/A | 333-190608 | 3.2 | August 29, 2013 |
| 3.2 | Certificate of Designation of Preferences, Rights and Limitations of Class A Convertible Preferred Stock | 8-K | 001-36076 | 3.1 | November 29, 2016 |
| 3.3 | Amended and Restated Bylaws of the Registrant, as currently in effect | — | — | — | Filed herewith |
| 4.1 | Specimen Common Stock Certificate | S-1/A | 333-190608 | 4.1 | August 29, 2013 |
| 4.2 | Warrant to Purchase Stock issued to Silicon Valley Bank on January 5, 2009 | S-1 | 333-190608 | 4.2 | August 13, 2013 |
| 4.3 | First Amendment to Warrant to Purchase Stock dated January 5, 2009 by and between the Registrant and SVB Financial Group, dated August 25, 2011 | S-1 | 333-190608 | 4.3 | August 13, 2013 |
| 4.4 | Warrant to Purchase Stock issued to Silicon Valley Bank on August 25, 2011 | S-1 | 333-190608 | 4.4 | August 13, 2013 |
| 4.5 | Description of Securities | — | — | — | Filed herewith |
| 4.6 | Form of Pre-Funded Warrant | 8-K | 001-36076 | 4.1 | January 8, 2021 |
| 10.1# | 2007 Equity Incentive Plan and forms of agreements thereunder | S-1/A | 333-190608 | 10.1 | August 29, 2013 |
| 10.2# | Amended and Restated 2013 Stock Option and Incentive Plan and forms of agreements thereunder | — | — | — | Filed herewith |
| 10.3# | Form of Unrestricted Stock Award Agreement under the 2013 Stock Option and Incentive Plan | 8-K | 001-36076 | 10.2 | January 7, 2015 |
| 10.4# | 2013 Employee Stock Purchase Plan | S-1/A | 333-190608 | 10.24 | September 16, 2013 |
| 10.5# | Amended and Restated Employment Agreement by and between the Registrant and Scott Wolchko, dated January 14, 2018 | 10-K | 001-36076 | 10.5 | March 5, 2018 |
| 10.6# | Amended and Restated Senior Executive Incentive Bonus Plan | 8-K | 001-36076 | 10.1 | January 7, 2015 |
| 10.7# | Amended and Restated Non-Employee Director Compensation Policy | — | — | — | Filed herewith |
| 10.8# | Fate Therapeutics, Inc. Amended and Restated Inducement Equity Plan | — | — | — | Filed herewith |
| 10.9# | Forms of Stock Option Agreement under Fate Therapeutics, Inc. Inducement Equity Plan | — | — | — | Filed herewith |
| 10.10# | Forms of Restricted Stock Unit Award Agreement under Fate Therapeutics, Inc. Inducement Equity Plan | — | — | — | Filed herewith |
| 10.11† | Exclusive License Agreement by and between the Registrant and Children's Medical Center Corporation, dated May 13, 2009 | S-1 | 333-190608 | 10.9 | August 13, 2013 |

| Exhibit Number | Exhibit Title | Incorporated by Reference | | | |
|---|---|---|---|---|---|
| | | Form | File No. | Exhibit | Filing Date |
| 10.12 | Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, LLC, dated December 3, 2009 | S-1 | 333-190608 | 10.14 | August 13, 2013 |
| 10.13 | First Amendment to Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, LLC, dated October 1, 2011 | S-1 | 333-190608 | 10.15 | August 13, 2013 |
| 10.14 | Second Amendment to Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, dated September 26, 2013 | S-1/A | 333-190608 | 10.25 | September 30, 2013 |
| 10.15 | Third Amendment to Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, dated September 2, 2014 | 10-K | 001-36076 | 10.15 | March 3, 2016 |
| 10.16 | Fourth Amendment to Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, dated March 2, 2015 | 10-K | 001-36076 | 10.16 | March 3, 2016 |
| 10.17 | Fifth Amendment to Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, dated June 1, 2016 | 10-Q | 001-36076 | 10.2 | August 8, 2016 |
| 10.18 | Form of Indemnification Agreement | S-1/A | 333-190608 | 10.20 | August 29, 2013 |
| 10.19† | Whitehead Institute for Biomedical Research Exclusive Patent License Agreement between the Registrant and the Whitehead Institute for Biomedical Research, dated as of February 24, 2009 | — | — | — | Filed herewith |
| 10.20† | License Agreement between the Registrant and The Scripps Research Institute, dated as of July 13, 2009 | — | — | — | Filed herewith |
| 10.21† | License Agreement between the Registrant and The Scripps Research Institute, dated as of May 25, 2010 | — | — | — | Filed herewith |
| 10.22† | License Agreement between the Registrant and The Scripps Research Institute, dated as of August 24, 2010 | — | — | — | Filed herewith |
| 10.23 | Securities Purchase Agreement, dated August 6, 2016, by and among the Registrant and the Purchasers | 8-K | 001-36076 | 10.1 | August 8, 2016 |
| 10.24 | Registration Rights Agreement, dated August 6, 2016, by and among the Registrant and the Purchasers | 8-K | 001-36076 | 10.2 | August 8, 2016 |
| 10.25 | Securities Purchase Agreement, dated November 21, 2016, by and among the Registrant and the Purchasers | 8-K | 001-36076 | 10.1 | November 22, 2016 |
| 10.26 | Registration Rights Agreement, dated November 21, 2016, by and among the Registrant and the Purchasers | 8-K | 001-36076 | 10.2 | November 22, 2016 |
| 10.27# | Severance and Change in Control Policy | 10-K | 001-36076 | 10.32 | March 5, 2018 |
| 10.28# | Offer Letter by and between the Registrant and Cindy R. Tahl, dated October 23, 2009 | 10-K | 001-36076 | 10.33 | March 5, 2019 |

| Exhibit Number | Exhibit Title | Incorporated by Reference | | | |
|---|---|---|---|---|---|
| | | Form | File No. | Exhibit | Filing Date |
| 10.29 | Sixth Amendment to the Lease Agreement by and between the Registrant and ARE-3535/3565 General Atomics Court, dated May 31, 2018 | 10-Q | 001-36076 | 10.1 | August 6, 2018 |
| 10.30 | Amended and Restated Exclusive License Agreement by and between the Registrant and Memorial Sloan Kettering Cancer Center, dated May 15, 2018 | 10-Q | 001-36076 | 10.2 | August 6, 2018 |
| 10.31† | Exclusive License Agreement by and between the Registrant and The David Gladstone Institutes, dated September 11, 2018 | 10-Q | 001-36076 | 10.1 | November 1, 2018 |
| 10.32† | Collaboration and Option Agreement by and between the Registrant and Ono Pharmaceutical Co., Ltd., dated September 14, 2018 | 10-Q/A | 001-36076 | 10.2 | February 8, 2019 |
| 10.33# | Offer Letter by and between the Registrant and Bahram Valamehr, dated November 23, 2009 | 10-K | 001-36076 | 10.38 | March 5, 2019 |
| 10.34† | Lease Agreement by and between the Registrant and Scripps Summit Investments LLC, dated January 7, 2020 | 10-K | 001-36076 | 10.34 | March 2, 2020 |
| 10.35† | Collaboration and Option Agreement by and between the Registrant and Janssen Biotech, Inc., dated April 2, 2020 | 10-Q | 001-36076 | 10.1 | August 5, 2020 |
| 10.36† | Stock Purchase Agreement by and between the Registrant and Johnson & Johnson Innovation – JJDC, Inc., dated April 2, 2020 | 10-Q | 001-36076 | 10.2 | August 5, 2020 |
| 10.37† | Stock Purchase Agreement by and between the Registrant and Johnson & Johnson Innovation – JJDC, Inc., dated June 8, 2020 | 10-Q | 001-36076 | 10.3 | August 5, 2020 |
| 10.38# | Offer Letter by and between the Registrant and Edward Dulac III, dated May 20, 2020 | 8-K | 001-36076 | 10.1 | August 19, 2020 |
| 10.39† | Letter Agreement, dated December 4, 2020, by and between the Registrant and Ono Pharmaceutical Co., Ltd. | — | — | — | Filed herewith |
| 10.40† | Patent License Agreement by and between the Registrant and Max-Delbrück-Centrum für Molekulare Medizin in der Helmholtz-Gemeinschaft, dated August 30, 2019 | — | — | — | Filed herewith |
| 14.1 | Amended Code of Business Conduct and Ethics | 10-K | 001-36076 | 14.1 | March 5, 2019 |
| 21.1 | Subsidiaries of the Registrant | 10-K | 001-36076 | 21.1 | March 5, 2019 |
| 23.1 | Consent of Independent Registered Public Accounting Firm | — | — | — | Filed herewith |
| 24.1 | Power of Attorney (included on signature page to this Annual Report) | — | — | — | Filed herewith |

| Exhibit Number | Exhibit Title | Incorporated by Reference | | | |
|---|---|---|---|---|---|
| | | Form | File No. | Exhibit | Filing Date |
| 31.1 | Certification of Principal Executive Officer pursuant to Rules 13a-14 and 15-d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 | — | — | — | Filed herewith |
| 31.2 | Certification of Principal Financial Officer pursuant to Rules 13a-14 and 15-d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 | — | — | — | Filed herewith |
| 32.1 | Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 | — | — | — | Filed herewith |
| 32.2 | Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 | — | — | — | Filed herewith |
| 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. | — | — | — | Filed herewith |
| 101.SCH | Inline XBRL Taxonomy Extension Schema Document | — | — | — | Filed herewith |
| 101.CAL | Inline XBRL Taxonomy Extension Calculation Linkbase Document | — | — | — | Filed herewith |
| 101.DEF | Inline XBRL Taxonomy Extension Definition Linkbase Document | — | — | — | Filed herewith |
| 101.LAB | Inline XBRL Taxonomy Extension Label Linkbase Document | — | — | — | Filed herewith |
| 101.PRE | Inline XBRL Taxonomy Extension Presentation Linkbase Document | — | — | — | Filed herewith |
| 104 | Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101). | — | — | — | Filed herewith |

† Certain provisions of this Exhibit have been omitted as confidential information.
# Indicates a management contract or any compensatory plan, contract or arrangement.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

**Fate Therapeutics, Inc.**

Date: February 24, 2021 By: /s/ J. Scott Wolchko
J. Scott Wolchko
*President and Chief Executive Officer*
*(Principal Executive Officer and Authorized Signatory)*

Date: February 24, 2021 By: /s/ Edward J. Dulac III
Edward J. Dulac III
*Chief Financial Officer*
*(Principal Financial and Accounting Officer)*

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints each of J. Scott Wolchko and Edward J. Dulac III as his or her attorney-in-fact, with the power of substitution, for him or her in any and all capacities, to sign any amendments to this report, and to file the same, with exhibits thereto and other documents in connection therewith with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorney-in-fact, or his or her substitute or substitutes may 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 in the capacities and on the dates indicated:

| SIGNATURE | TITLE | DATE |
|---|---|---|
| /s/ J. Scott Wolchko<br>J. Scott Wolchko | President and Chief Executive Officer and Director<br>(Principal Executive Officer) | February 24, 2021 |
| /s/ Edward J. Dulac III<br>Edward J. Dulac III | Chief Financial Officer<br>(Principal Financial and Accounting Officer) | February 24, 2021 |
| /s/ William H. Rastetter<br>William H. Rastetter, Ph.D. | Chairman of the Board and Director | February 24, 2021 |
| /s/ John D. Mendlein<br>John D. Mendlein, Ph.D., J.D. | Vice Chairman of the Board and Director | February 24, 2021 |
| /s/ Shefali Agarwal<br>Shefali Agarwal, M.D. | Director | February 24, 2021 |
| /s/ Timothy P. Coughlin<br>Timothy P. Coughlin | Director | February 24, 2021 |
| /s/ Robert S. Epstein<br>Robert S. Epstein | Director | February 24, 2021 |
| /s/ Robert Hershberg<br>Robert Hershberg, M.D., Ph.D. | Director | February 24, 2021 |
| /s/ Karin Jooss<br>Karin Jooss, Ph.D. | Director | February 24, 2021 |
| /s/ Michael Lee<br>Michael Lee | Director | February 24, 2021 |

**Exhibit 3.3**

**AMENDED AND RESTATED**

**BYLAWS**

**OF**

**FATE THERAPEUTICS, INC.**

(the "Corporation")

ARTICLE I

Stockholders

SECTION 1. Annual Meeting. The annual meeting of stockholders (any such meeting being referred to in these Bylaws as an "Annual Meeting") shall be held at the hour, date and place within or without the United States which is fixed by the Board of Directors, which time, date and place may subsequently be changed at any time by vote of the Board of Directors. If no Annual Meeting has been held for a period of thirteen (13) months after the Corporation's last Annual Meeting, a special meeting in lieu thereof may be held, and such special meeting shall have, for the purposes of these Bylaws or otherwise, all the force and effect of an Annual Meeting. Any and all references hereafter in these Bylaws to an Annual Meeting or Annual Meetings also shall be deemed to refer to any special meeting(s) in lieu thereof.

SECTION 2. Notice of Stockholder Business and Nominations.

(a) Annual Meetings of Stockholders.

(1) Nominations of persons for election to the Board of Directors of the Corporation and the proposal of other business to be considered by the stockholders may be brought before an Annual Meeting (i) by or at the direction of the Board of Directors or (ii) by any stockholder of the Corporation who was a stockholder of record at the time of giving of notice provided for in this Bylaw, who is entitled to vote at the meeting, who is present (in person or by proxy) at the meeting and who complies with the notice procedures set forth in this Bylaw as to such nomination or business. For the avoidance of doubt, the foregoing clause (ii) shall be the exclusive means for a stockholder to bring nominations or business properly before an Annual Meeting (other than matters properly brought under Rule 14a-8 or Rule 14a-11 (or any successor rules) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")), and such stockholder must comply with the notice and other procedures set forth in Article I, Section 2(a)(2) and (3) of this Bylaw to bring such nominations or business properly before an Annual Meeting. In addition to the other requirements set forth in this Bylaw, for any proposal of business to be considered at an Annual Meeting, it must be a proper subject for action by stockholders of the Corporation under Delaware law.

(2) For nominations or other business to be properly brought before an Annual Meeting by a stockholder pursuant to clause (ii) of Article I, Section 2(a)(1) of this Bylaw, the stockholder must (i) have given Timely Notice (as defined below) thereof in writing to the Secretary of the Corporation, (ii) have provided any updates or supplements to such notice at the times and in the forms required by this Bylaw and (iii) together with the beneficial owner(s), if any, on whose behalf the nomination or business proposal is made, have acted in accordance with the representations set forth in the Solicitation Statement (as defined below) required by this Bylaw. To be timely, a stockholder's written notice shall be received by the Secretary at the principal executive offices of the Corporation not later than the close of business on the ninetieth (90th) day nor earlier than the close of business on the one hundred twentieth (120th) day prior to the one-year anniversary of the preceding year's Annual Meeting; provided, however, that in the event the Annual Meeting is first convened more than thirty (30) days before or more than sixty (60) days after such anniversary date, or if no Annual Meeting were held in the preceding year, notice by the stockholder to be timely must be received by the Secretary of the Corporation not later than the close of business on the later of the ninetieth (90th) day prior to the scheduled date of such Annual Meeting or the tenth (10th) day following the day on which public announcement of the date of such meeting is first made (such notice within such time periods shall be referred to as "Timely Notice"). Notwithstanding anything to the contrary provided herein, for the first Annual Meeting following the initial public offering of common stock of the Corporation, a stockholder's notice shall be timely if received by the Secretary at the principal executive offices of the Corporation not later than the close of

business on the later of the ninetieth (90th) day prior to the scheduled date of such Annual Meeting or the tenth (10th) day following the day on which public announcement of the date of such Annual Meeting is first made or sent by the Corporation. Such stockholder's Timely Notice shall set forth:

(A) as to each person whom the stockholder proposes to nominate for election or reelection as a director, all information relating to such person that is required to be disclosed in solicitations of proxies for election of directors in an election contest, or is otherwise required, in each case pursuant to Regulation 14A under the Exchange Act (including such person's written consent to being named in the proxy statement as a nominee and to serving as a director if elected);

(B) as to any other business that the stockholder proposes to bring before the meeting, a brief description of the business desired to be brought before the meeting, the reasons for conducting such business at the meeting, and any material interest in such business of each Proposing Person (as defined below);

(C) (i) the name and address of the stockholder giving the notice, as they appear on the Corporation's books, and the names and addresses of the other Proposing Persons (if any) and (ii) as to each Proposing Person, the following information: (a) the class or series and number of all shares of capital stock of the Corporation which are, directly or indirectly, owned beneficially or of record by such Proposing Person or any of its affiliates or associates (as such terms are defined in Rule 12b-2 promulgated under the Exchange Act), including any shares of any class or series of capital stock of the Corporation as to which such Proposing Person or any of its affiliates or associates has a right to acquire beneficial ownership at any time in the future, (b) all Synthetic Equity Interests (as defined below) in which such Proposing Person or any of its affiliates or associates, directly or indirectly, holds an interest including a description of the material terms of each such Synthetic Equity Interest, including without limitation, identification of the counterparty to each such Synthetic Equity Interest and disclosure, for each such Synthetic Equity Interest, as to (x) whether or not such Synthetic Equity Interest conveys any voting rights, directly or indirectly, in such shares to such Proposing Person, (y) whether or not such Synthetic Equity Interest is required to be, or is capable of being, settled through delivery of such shares and (z) whether or not such Proposing Person and/or, to the extent known, the counterparty to such Synthetic Equity Interest has entered into other transactions that hedge or mitigate the economic effect of such Synthetic Equity Interest, (c) any proxy (other than a revocable proxy given in response to a public proxy solicitation made pursuant to, and in accordance with, the Exchange Act), agreement, arrangement, understanding or relationship pursuant to which such Proposing Person has or shares a right to, directly or indirectly, vote any shares of any class or series of capital stock of the Corporation, (d) any rights to dividends or other distributions on the shares of any class or series of capital stock of the Corporation, directly or indirectly, owned beneficially by such Proposing Person that are separated or separable from the underlying shares of the Corporation, and (e) any performance-related fees (other than an asset based fee) that such Proposing Person, directly or indirectly, is entitled to based on any increase or decrease in the value of shares of any class or series of capital stock of the Corporation or any Synthetic Equity Interests (the disclosures to be made pursuant to the foregoing clauses (a) through (e) are referred to, collectively, as "Material Ownership Interests") and (iii) a description of the material terms of all agreements, arrangements or understandings (whether or not in writing) entered into by any Proposing Person or any of its affiliates or associates with any other person for the purpose of acquiring, holding, disposing or voting of any shares of any class or series of capital stock of the Corporation;

(D) (i) a description of all agreements, arrangements or understandings by and among any of the Proposing Persons, or by and among any Proposing Persons and any other person (including with any proposed nominee(s)), pertaining to the nomination(s) or other business proposed to be brought before the meeting of stockholders (which description shall identify the name of each other person who is party to such an agreement, arrangement or understanding), and (ii) identification of the names and addresses of other stockholders (including beneficial owners) known by any of the Proposing Persons to support such nominations or other business proposal(s), and to the extent known the class and number of all shares of the Corporation's capital stock owned beneficially or of record by such other stockholder(s) or other beneficial owner(s); and

(E) a statement whether or not the stockholder giving the notice and/or the other Proposing Person(s), if any, will deliver a proxy statement and form of proxy to holders of, in the case of a business proposal, at least the percentage of voting power of all of the shares of capital stock of the Corporation required under applicable law to approve the proposal or, in the case of a nomination or nominations, at least the percentage of voting power of all of the shares of capital stock of the Corporation reasonably believed by such Proposing Person to be sufficient to elect the nominee or nominees proposed to be nominated by such stockholder (such statement, the "Solicitation Statement").

For purposes of this Article I of these Bylaws, the term “Proposing Person” shall mean the following persons: (i) the stockholder of record providing the notice of nominations or business proposed to be brought before a stockholders’ meeting, and (ii) the beneficial owner(s), if different, on whose behalf the nominations or business proposed to be brought before a stockholders’ meeting is made. For purposes of this Section 2 of Article I of these Bylaws, the term “Synthetic Equity Interest” shall mean any transaction, agreement or arrangement (or series of transactions, agreements or arrangements), including, without limitation, any derivative, swap, hedge, repurchase or so-called “stock borrowing” agreement or arrangement, the purpose or effect of which is to, directly or indirectly: (a) give a person or entity economic benefit and/or risk similar to ownership of shares of any class or series of capital stock of the Corporation, in whole or in part, including due to the fact that such transaction, agreement or arrangement provides, directly or indirectly, the opportunity to profit or avoid a loss from any increase or decrease in the value of any shares of any class or series of capital stock of the Corporation, (b) mitigate loss to, reduce the economic risk of or manage the risk of share price changes for, any person or entity with respect to any shares of any class or series of capital stock of the Corporation, (c) otherwise provide in any manner the opportunity to profit or avoid a loss from any decrease in the value of any shares of any class or series of capital stock of the Corporation, or (d) increase or decrease the voting power of any person or entity with respect to any shares of any class or series of capital stock of the Corporation.

(3) A stockholder providing Timely Notice of nominations or business proposed to be brought before an Annual Meeting shall further update and supplement such notice, if necessary, so that the information (including, without limitation, the Material Ownership Interests information) provided or required to be provided in such notice pursuant to this Bylaw shall be true and correct as of the record date for the meeting and as of the date that is ten (10) business days prior to such Annual Meeting, and such update and supplement shall be received by the Secretary at the principal executive offices of the Corporation not later than the close of business on the fifth (5th) business day after the record date for the Annual Meeting (in the case of the update and supplement required to be made as of the record date), and not later than the close of business on the eighth (8th) business day prior to the date of the Annual Meeting (in the case of the update and supplement required to be made as of ten (10) business days prior to the meeting).

(4) Notwithstanding anything in the second sentence of Article I, Section 2(a)(2) of this Bylaw to the contrary, in the event that the number of directors to be elected to the Board of Directors of the Corporation is increased and there is no public announcement naming all of the nominees for director or specifying the size of the increased Board of Directors made by the Corporation at least ten (10) days before the last day a stockholder may deliver a notice of nomination in accordance with the second sentence of Article I, Section 2(a)(2), a stockholder’s notice required by this Bylaw shall also be considered timely, but only with respect to nominees for any new positions created by such increase, if it shall be received by the Secretary of the Corporation not later than the close of business on the tenth (10th) day following the day on which such public announcement is first made by the Corporation.

(b) General.

(1) Only such persons who are nominated in accordance with the provisions of this Bylaw or in accordance with Rule 14a-11 under the Exchange Act shall be eligible for election and to serve as directors and only such business shall be conducted at an Annual Meeting as shall have been brought before the meeting in accordance with the provisions of this Bylaw or in accordance with Rule 14a-8 under the Exchange Act. The Board of Directors or a designated committee thereof shall have the power to determine whether a nomination or any business proposed to be brought before the meeting was made in accordance with the provisions of this Bylaw. If neither the Board of Directors nor such designated committee makes a determination as to whether any stockholder proposal or nomination was made in accordance with the provisions of this Bylaw, the presiding officer of the Annual Meeting shall have the power and duty to determine whether the stockholder proposal or nomination was made in accordance with the provisions of this Bylaw. If the Board of Directors or a designated committee thereof or the presiding officer, as applicable, determines that any stockholder proposal or nomination was not made in accordance with the provisions of this Bylaw, such proposal or nomination shall be disregarded and shall not be presented for action at the Annual Meeting.

(2) Except as otherwise required by law, nothing in this Article I, Section 2 shall obligate the Corporation or the Board of Directors to include in any proxy statement or other stockholder communication distributed on behalf of the Corporation or the Board of Directors information with respect to any nominee for director or any other matter of business submitted by a stockholder.

(3) Notwithstanding the foregoing provisions of this Article I, Section 2, if the nominating or proposing stockholder (or a qualified representative of the stockholder) does not appear at the Annual Meeting to present a nomination or any business, such nomination or business shall be disregarded, notwithstanding that proxies in respect of such vote may have been received by the Corporation. For purposes of this Article I, Section 2, to be considered a qualified representative of the proposing stockholder, a person must be authorized by a written instrument executed by such stockholder or an electronic transmission delivered by such stockholder to act for such stockholder as proxy at the meeting of stockholders and such person must produce such written instrument or electronic transmission, or a reliable reproduction of the written instrument or electronic transmission, to the presiding officer at the meeting of stockholders.

(4) For purposes of this Bylaw, "public announcement" shall mean disclosure in a press release reported by the Dow Jones News Service, Associated Press or comparable national news service or in a document publicly filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Exchange Act.

(5) Notwithstanding the foregoing provisions of this Bylaw, a stockholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations thereunder with respect to the matters set forth in this Bylaw. Nothing in this Bylaw shall be deemed to affect any rights of (i) stockholders to have nominations or proposals included in the Corporation's proxy statement pursuant to Rule 14a-8 or Rule 14a-11 (or any successor rules), as applicable, under the Exchange Act and, to the extent required by such rule, have such nominations or proposals considered and voted on at an Annual Meeting or (ii) the holders of any series of Undesignated Preferred Stock to elect directors under specified circumstances.

SECTION 3. Special Meetings. Except as otherwise required by statute and subject to the rights, if any, of the holders of any series of Undesignated Preferred Stock, special meetings of the stockholders of the Corporation may be called only by the Board of Directors acting pursuant to a resolution approved by the affirmative vote of a majority of the Directors then in office. The Board of Directors may postpone or reschedule any previously scheduled special meeting of stockholders. Only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders of the Corporation. Nominations of persons for election to the Board of Directors of the Corporation and stockholder proposals of other business shall not be brought before a special meeting of stockholders to be considered by the stockholders unless such special meeting is held in lieu of an annual meeting of stockholders in accordance with Article I, Section 1 of these Bylaws, in which case such special meeting in lieu thereof shall be deemed an Annual Meeting for purposes of these Bylaws and the provisions of Article I, Section 2 of these Bylaws shall govern such special meeting.

SECTION 4. Notice of Meetings; Adjournments.

(a) A notice of each Annual Meeting stating the hour, date and place, if any, of such Annual Meeting and the means of remote communication, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such meeting, shall be given not less than ten (10) days nor more than sixty (60) days before the Annual Meeting, to each stockholder entitled to vote thereat by delivering such notice to such stockholder or by mailing it, postage prepaid, addressed to such stockholder at the address of such stockholder as it appears on the Corporation's stock transfer books. Without limiting the manner by which notice may otherwise be given to stockholders, any notice to stockholders may be given by electronic transmission in the manner provided in Section 232 of the Delaware General Corporation Law ("DGCL").

(b) Notice of all special meetings of stockholders shall be given in the same manner as provided for Annual Meetings, except that the notice of all special meetings shall state the purpose or purposes for which the meeting has been called.

(c) Notice of an Annual Meeting or special meeting of stockholders need not be given to a stockholder if a waiver of notice is executed, or waiver of notice by electronic transmission is provided, before or after such meeting by such stockholder or if such stockholder attends such meeting, unless such attendance is for the express purpose of objecting at the beginning of the meeting to the transaction of any business because the meeting was not lawfully called or convened.

(d) The Board of Directors may postpone and reschedule any previously scheduled Annual Meeting or special meeting of stockholders and any record date with respect thereto, regardless of whether any notice or public disclosure with respect to any such meeting has been sent or made pursuant to Section 2 of this Article I of these

Bylaws or otherwise. In no event shall the public announcement of an adjournment, postponement or rescheduling of any previously scheduled meeting of stockholders commence a new time period for the giving of a stockholder's notice under this Article I of these Bylaws.

(e) When any meeting is convened, the presiding officer may adjourn the meeting if (i) no quorum is present for the transaction of business, (ii) the Board of Directors determines that adjournment is necessary or appropriate to enable the stockholders to consider fully information which the Board of Directors determines has not been made sufficiently or timely available to stockholders, or (iii) the Board of Directors determines that adjournment is otherwise in the best interests of the Corporation. When any Annual Meeting or special meeting of stockholders is adjourned to another hour, date or place, notice need not be given of the adjourned meeting other than an announcement at the meeting at which the adjournment is taken of the hour, date and place, if any, to which the meeting is adjourned and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting; provided, however, that if the adjournment is for more than thirty (30) days from the meeting date, or if after the adjournment a new record date is fixed for the adjourned meeting, notice of the adjourned meeting and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting shall be given to each stockholder of record entitled to vote thereat and each stockholder who, by law or under the Certificate of Incorporation of the Corporation (as the same may hereafter be amended and/or restated, the "Certificate") or these Bylaws, is entitled to such notice.

SECTION 5. Quorum. A majority of the shares entitled to vote, present in person or represented by proxy, shall constitute a quorum at any meeting of stockholders. If less than a quorum is present at a meeting, the holders of voting stock representing a majority of the voting power present at the meeting or the presiding officer may adjourn the meeting from time to time, and the meeting may be held as adjourned without further notice, except as provided in Section 4 of this Article I. At such adjourned meeting at which a quorum is present, any business may be transacted which might have been transacted at the meeting as originally noticed. The stockholders present at a duly constituted meeting may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum.

SECTION 6. Voting and Proxies. Stockholders shall have one vote for each share of stock entitled to vote owned by them of record according to the stock ledger of the Corporation as of the record date, unless otherwise provided by law or by the Certificate. Stockholders may vote either (i) in person, (ii) by written proxy or (iii) by a transmission permitted by Section 212(c) of the DGCL. Any copy, facsimile telecommunication or other reliable reproduction of the writing or transmission permitted by Section 212(c) of the DGCL may be substituted for or used in lieu of the original writing or transmission for any and all purposes for which the original writing or transmission could be used, provided that such copy, facsimile telecommunication or other reproduction shall be a complete reproduction of the entire original writing or transmission. Proxies shall be filed in accordance with the procedures established for the meeting of stockholders. Except as otherwise limited therein or as otherwise provided by law, proxies authorizing a person to vote at a specific meeting shall entitle the persons authorized thereby to vote at any adjournment of such meeting, but they shall not be valid after final adjournment of such meeting. A proxy with respect to stock held in the name of two or more persons shall be valid if executed by or on behalf of any one of them unless at or prior to the exercise of the proxy the Corporation receives a specific written notice to the contrary from any one of them.

SECTION 7. Action at Meeting. When a quorum is present at any meeting of stockholders, any matter before any such meeting (other than an election of a director or directors) shall be decided by a majority of the votes properly cast for and against such matter, except where a larger vote is required by law, by the Certificate or by these Bylaws. Any election of directors by stockholders shall be determined by a plurality of the votes properly cast on the election of directors.

SECTION 8. Stockholder Lists. The Secretary or an Assistant Secretary (or the Corporation's transfer agent or other person authorized by these Bylaws or by law) shall prepare and make, at least ten (10) days before every Annual Meeting or special meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for a period of at least ten (10) days prior to the meeting in the manner provided by law. The list shall also be open to the examination of any stockholder during the whole time of the meeting as provided by law.

SECTION 9. Presiding Officer. The Board of Directors shall designate a representative to preside over all Annual Meetings or special meetings of stockholders, provide that if the Board of Directors does not so designate such a presiding officer, then the Chairman of the Board, if one is elected, shall preside over such meetings. If the Board of Directors does not so designate such a presiding officer and there is no Chairman of the Board or the Chairman of the Board is unable to so preside or is absent, then the Chief Executive Officer, if one is elected, shall preside over such meetings, provided further that if there is no Chief Executive Officer or the Chief Executive Officer is unable to so preside or is absent, then the President shall preside over such meetings. The presiding officer at any Annual Meeting or special meeting of stockholders shall have the power, among other things, to adjourn such meeting at any time and from time to time, subject to Sections 4 and 5 of this Article I. The order of business and all other matters of procedure at any meeting of the stockholders shall be determined by the presiding officer.

SECTION 10. Inspectors of Elections. The Corporation shall, in advance of any meeting of stockholders, appoint one or more inspectors to act at the meeting and make a written report thereof. The Corporation may designate one or more persons as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the presiding officer shall appoint one or more inspectors to act at the meeting. Any inspector may, but need not, be an officer, employee or agent of the Corporation. Each inspector, before entering upon the discharge of his or her duties, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors shall perform such duties as are required by the DGCL, including the counting of all votes and ballots. The inspectors may appoint or retain other persons or entities to assist the inspectors in the performance of the duties of the inspectors. The presiding officer may review all determinations made by the inspectors, and in so doing the presiding officer shall be entitled to exercise his or her sole judgment and discretion and he or she shall not be bound by any determinations made by the inspectors. All determinations by the inspectors and, if applicable, the presiding officer, shall be subject to further review by any court of competent jurisdiction.

## ARTICLE II

## Directors

SECTION 1. Powers. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors except as otherwise provided by the Certificate or required by law.

SECTION 2. Number and Terms. The number of directors of the Corporation shall be fixed solely and exclusively by resolution duly adopted from time to time by the Board of Directors. The directors shall hold office in the manner provided in the Certificate.

SECTION 3. Qualification. No director need be a stockholder of the Corporation.

SECTION 4. Vacancies. Vacancies in the Board of Directors shall be filled in the manner provided in the Certificate.

SECTION 5. Removal. Directors may be removed from office only in the manner provided in the Certificate.

SECTION 6. Resignation. A director may resign at any time by giving written notice to the Chairman of the Board, if one is elected, the President or the Secretary. A resignation shall be effective upon receipt, unless the resignation otherwise provides.

SECTION 7. Regular Meetings. The regular annual meeting of the Board of Directors shall be held, without notice other than this Section 7, on the same date and at the same place as the Annual Meeting following the close of such meeting of stockholders. Other regular meetings of the Board of Directors may be held at such hour, date and place as the Board of Directors may by resolution from time to time determine and publicize by means of reasonable notice given to any director who is not present at the meeting at which such resolution is adopted.

SECTION 8. Special Meetings. Special meetings of the Board of Directors may be called, orally or in writing, by or at the request of a majority of the directors, the Chairman of the Board, if one is elected, or the President. The person calling any such special meeting of the Board of Directors may fix the hour, date and place thereof.

SECTION 9. Notice of Meetings. Notice of the hour, date and place of all special meetings of the Board of Directors shall be given to each director by the Secretary or an Assistant Secretary, or in case of the death, absence, incapacity or refusal of such persons, by the Chairman of the Board, if one is elected, or the President or such other officer designated by the Chairman of the Board, if one is elected, or the President. Notice of any special meeting of the Board of Directors shall be given to each director in person, by telephone, or by facsimile, electronic mail or other form of electronic communication, sent to his or her business or home address, at least twenty-four (24) hours in advance of the meeting, or by written notice mailed to his or her business or home address, at least forty-eight (48) hours in advance of the meeting. Such notice shall be deemed to be delivered when hand-delivered to such address, read to such director by telephone, deposited in the mail so addressed, with postage thereon prepaid if mailed, dispatched or transmitted if sent by facsimile transmission or by electronic mail or other form of electronic communications. A written waiver of notice signed before or after a meeting by a director and filed with the records of the meeting shall be deemed to be equivalent to notice of the meeting. The attendance of a director at a meeting shall constitute a waiver of notice of such meeting, except where a director attends a meeting for the express purpose of objecting at the beginning of the meeting to the transaction of any business because such meeting is not lawfully called or convened. Except as otherwise required by law, by the Certificate or by these Bylaws, neither the business to be transacted at, nor the purpose of, any meeting of the Board of Directors need be specified in the notice or waiver of notice of such meeting.

SECTION 10. Quorum. At any meeting of the Board of Directors, a majority of the total number of directors shall constitute a quorum for the transaction of business, but if less than a quorum is present at a meeting, a majority of the directors present may adjourn the meeting from time to time, and the meeting may be held as adjourned without further notice. Any business which might have been transacted at the meeting as originally noticed may be transacted at such adjourned meeting at which a quorum is present. For purposes of this section, the total number of directors includes any unfilled vacancies on the Board of Directors.

SECTION 11. Action at Meeting. At any meeting of the Board of Directors at which a quorum is present, the vote of a majority of the directors present shall constitute action by the Board of Directors, unless otherwise required by law, by the Certificate or by these Bylaws.

SECTION 12. Action by Consent. Any action required or permitted to be taken at any meeting of the Board of Directors may be taken without a meeting if all members of the Board of Directors consent thereto in writing or by electronic transmission and the writing or writings or electronic transmission or transmissions are filed with the records of the meetings of the Board of Directors. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form. Such consent shall be treated as a resolution of the Board of Directors for all purposes.

SECTION 13. Manner of Participation. Directors may participate in meetings of the Board of Directors by means of conference telephone or other communications equipment by means of which all directors participating in the meeting can hear each other, and participation in a meeting in accordance herewith shall constitute presence in person at such meeting for purposes of these Bylaws.

SECTION 14. Presiding Director. The Board of Directors shall designate a representative to preside over all meetings of the Board of Directors, provided that if the Board of Directors does not so designate such a presiding director or such designated presiding director is unable to so preside or is absent, then the Chairman of the Board, if one is elected, shall preside over all meetings of the Board of Directors. If both the designated presiding director, if one is so designated, and the Chairman of the Board, if one is elected, are unable to preside or are absent, the Board of Directors shall designate an alternate representative to preside over a meeting of the Board of Directors.

SECTION 15. Committees. The Board of Directors, by vote of a majority of the directors then in office, may elect one or more committees, including, without limitation, a Compensation Committee, a Nominating & Corporate Governance Committee and an Audit Committee, and may delegate thereto some or all of its powers except those which by law, by the Certificate or by these Bylaws may not be delegated. Except as the Board of Directors may otherwise determine, any such committee may make rules for the conduct of its business, but unless otherwise provided by the Board of Directors or in such rules, its business shall be conducted so far as possible in the same manner as is provided by these Bylaws for the Board of Directors. All members of such committees shall hold such offices at the pleasure of the Board of Directors. The Board of Directors may abolish any such committee at any

time. Any committee to which the Board of Directors delegates any of its powers or duties shall keep records of its meetings and shall report its action to the Board of Directors.

SECTION 16. Compensation of Directors. Directors shall receive such compensation for their services as shall be determined by a majority of the Board of Directors, or a designated committee thereof, provided that directors who are serving the Corporation as employees and who receive compensation for their services as such, shall not receive any salary or other compensation for their services as directors of the Corporation.

## ARTICLE III

## Officers

SECTION 1. Enumeration. The officers of the Corporation shall consist of a President, a Treasurer, a Secretary and such other officers, including, without limitation, a Chairman of the Board of Directors, a Chief Executive Officer and one or more Vice Presidents (including Executive Vice Presidents or Senior Vice Presidents), Assistant Vice Presidents, Assistant Treasurers and Assistant Secretaries, as the Board of Directors may determine.

SECTION 2. Election. At the regular annual meeting of the Board of Directors following the Annual Meeting, the Board of Directors shall elect the President, the Treasurer and the Secretary. Other officers may be elected by the Board of Directors at such regular annual meeting of the Board of Directors or at any other regular or special meeting.

SECTION 3. Qualification. No officer need be a stockholder or a director. Any person may occupy more than one office of the Corporation at any time.

SECTION 4. Tenure. Except as otherwise provided by the Certificate or by these Bylaws, each of the officers of the Corporation shall hold office until the regular annual meeting of the Board of Directors following the next Annual Meeting and until his or her successor is elected and qualified or until his or her earlier resignation or removal.

SECTION 5. Resignation. Any officer may resign by delivering his or her written resignation to the Corporation addressed to the President or the Secretary, and such resignation shall be effective upon receipt, unless the resignation otherwise provides.

SECTION 6. Removal. Except as otherwise provided by law, the Board of Directors may remove any officer with or without cause by the affirmative vote of a majority of the directors then in office.

SECTION 7. Absence or Disability. In the event of the absence or disability of any officer, the Board of Directors may designate another officer to act temporarily in place of such absent or disabled officer.

SECTION 8. Vacancies. Any vacancy in any office may be filled for the unexpired portion of the term by the Board of Directors.

SECTION 9. President. The President shall, subject to the direction of the Board of Directors, have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 10. Chairman of the Board. The Chairman of the Board, if one is elected, shall have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 11. Chief Executive Officer. The Chief Executive Officer, if one is elected, shall have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 12. Vice Presidents and Assistant Vice Presidents. Any Vice President (including any Executive Vice President or Senior Vice President) and any Assistant Vice President shall have such powers and shall perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 13. Treasurer and Assistant Treasurers. The Treasurer shall, subject to the direction of the Board of Directors and except as the Board of Directors or the Chief Executive Officer may otherwise provide, have general charge of the financial affairs of the Corporation and shall cause to be kept accurate books of account. The Treasurer shall have custody of all funds, securities, and valuable documents of the Corporation. He or she shall have such

other duties and powers as may be designated from time to time by the Board of Directors or the Chief Executive Officer. Any Assistant Treasurer shall have such powers and perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 14. Secretary and Assistant Secretaries. The Secretary shall record all the proceedings of the meetings of the stockholders and the Board of Directors (including committees of the Board of Directors) in books kept for that purpose. In his or her absence from any such meeting, a temporary secretary chosen at the meeting shall record the proceedings thereof. The Secretary shall have charge of the stock ledger (which may, however, be kept by any transfer or other agent of the Corporation). The Secretary shall have custody of the seal of the Corporation, and the Secretary, or an Assistant Secretary shall have authority to affix it to any instrument requiring it, and, when so affixed, the seal may be attested by his or her signature or that of an Assistant Secretary. The Secretary shall have such other duties and powers as may be designated from time to time by the Board of Directors or the Chief Executive Officer. In the absence of the Secretary, any Assistant Secretary may perform his or her duties and responsibilities. Any Assistant Secretary shall have such powers and perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 15. Other Powers and Duties. Subject to these Bylaws and to such limitations as the Board of Directors may from time to time prescribe, the officers of the Corporation shall each have such powers and duties as generally pertain to their respective offices, as well as such powers and duties as from time to time may be conferred by the Board of Directors or the Chief Executive Officer.

## ARTICLE IV

## Capital Stock

SECTION 1. Certificates of Stock. Each stockholder shall be entitled to a certificate of the capital stock of the Corporation in such form as may from time to time be prescribed by the Board of Directors. Such certificate shall be signed by the Chairman of the Board, the President or a Vice President and by the Treasurer or an Assistant Treasurer, or the Secretary or an Assistant Secretary. The Corporation seal and the signatures by the Corporation's officers, the transfer agent or the registrar may be facsimiles. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed on such certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if he or she were such officer, transfer agent or registrar at the time of its issue. Every certificate for shares of stock which are subject to any restriction on transfer and every certificate issued when the Corporation is authorized to issue more than one class or series of stock shall contain such legend with respect thereto as is required by law. Notwithstanding anything to the contrary provided in these Bylaws, the Board of Directors of the Corporation may provide by resolution or resolutions that some or all of any or all classes or series of its stock shall be uncertificated shares (except that the foregoing shall not apply to shares represented by a certificate until such certificate is surrendered to the Corporation), and by the approval and adoption of these Bylaws the Board of Directors has determined that all classes or series of the Corporation's stock may be uncertificated, whether upon original issuance, re-issuance, or subsequent transfer.

SECTION 2. Transfers. Subject to any restrictions on transfer and unless otherwise provided by the Board of Directors, shares of stock that are represented by a certificate may be transferred on the books of the Corporation by the surrender to the Corporation or its transfer agent of the certificate theretofore properly endorsed or accompanied by a written assignment or power of attorney properly executed, with transfer stamps (if necessary) affixed, and with such proof of the authenticity of signature as the Corporation or its transfer agent may reasonably require. Shares of stock that are not represented by a certificate may be transferred on the books of the Corporation by submitting to the Corporation or its transfer agent such evidence of transfer and following such other procedures as the Corporation or its transfer agent may require.

SECTION 3. Record Holders. Except as may otherwise be required by law, by the Certificate or by these Bylaws, the Corporation shall be entitled to treat the record holder of stock as shown on its books as the owner of such stock for all purposes, including the payment of dividends and the right to vote with respect thereto, regardless of any transfer, pledge or other disposition of such stock, until the shares have been transferred on the books of the Corporation in accordance with the requirements of these Bylaws.

SECTION 4. Record Date. In order that the Corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date: (a) in the case of determination of stockholders entitled to vote at any meeting of stockholders, shall, unless otherwise required by law, not be more than sixty (60) nor less than ten (10) days before the date of such meeting and (b) in the case of any other action, shall not be more than sixty (60) days prior to such other action. If no record date is fixed: (i) the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held; and (ii) the record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

SECTION 5. Replacement of Certificates. In case of the alleged loss, destruction or mutilation of a certificate of stock of the Corporation, a duplicate certificate may be issued in place thereof, upon such terms as the Board of Directors may prescribe.

## ARTICLE V

## Indemnification

SECTION 1. Definitions. For purposes of this Article:

(a) “Corporate Status” describes the status of a person who is serving or has served (i) as a Director of the Corporation, (ii) as an Officer of the Corporation, (iii) as a Non-Officer Employee of the Corporation, or (iv) as a director, partner, trustee, officer, employee or agent of any other corporation, partnership, limited liability company, joint venture, trust, employee benefit plan, foundation, association, organization or other legal entity which such person is or was serving at the request of the Corporation. For purposes of this Section 1(a), a Director, Officer or Non-Officer Employee of the Corporation who is serving or has served as a director, partner, trustee, officer, employee or agent of a Subsidiary shall be deemed to be serving at the request of the Corporation. Notwithstanding the foregoing, “Corporate Status” shall not include the status of a person who is serving or has served as a director, officer, employee or agent of a constituent corporation absorbed in a merger or consolidation transaction with the Corporation with respect to such person’s activities prior to said transaction, unless specifically authorized by the Board of Directors or the stockholders of the Corporation;

(b) “Director” means any person who serves or has served the Corporation as a director on the Board of Directors of the Corporation;

(c) “Disinterested Director” means, with respect to each Proceeding in respect of which indemnification is sought hereunder, a Director of the Corporation who is not and was not a party to such Proceeding;

(d) “Expenses” means all attorneys’ fees, retainers, court costs, transcript costs, fees of expert witnesses, private investigators and professional advisors (including, without limitation, accountants and investment bankers), travel expenses, duplicating costs, printing and binding costs, costs of preparation of demonstrative evidence and other courtroom presentation aids and devices, costs incurred in connection with document review, organization, imaging and computerization, telephone charges, postage, delivery service fees, and all other disbursements, costs or expenses of the type customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, being or preparing to be a witness in, settling or otherwise participating in, a Proceeding;

(e) “Liabilities” means judgments, damages, liabilities, losses, penalties, excise taxes, fines and amounts paid in settlement;

(f) “Non-Officer Employee” means any person who serves or has served as an employee or agent of the Corporation, but who is not or was not a Director or Officer;

(g) “Officer” means any person who serves or has served the Corporation as an officer of the Corporation appointed by the Board of Directors of the Corporation;

(h) “Proceeding” means any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, inquiry, investigation, administrative hearing or other proceeding, whether civil, criminal, administrative, arbitrative or investigative; and

(i) “Subsidiary” shall mean any corporation, partnership, limited liability company, joint venture, trust or other entity of which the Corporation owns (either directly or through or together with another Subsidiary of the Corporation) either (i) a general partner, managing member or other similar interest or (ii) (A) fifty percent (50%) or more of the voting power of the voting capital equity interests of such corporation, partnership, limited liability company, joint venture or other entity, or (B) fifty percent (50%) or more of the outstanding voting capital stock or other voting equity interests of such corporation, partnership, limited liability company, joint venture or other entity.

SECTION 2. Indemnification of Directors and Officers.

(a) Subject to the operation of Section 4 of this Article V of these Bylaws, each Director and Officer shall be indemnified and held harmless by the Corporation to the fullest extent authorized by the DGCL, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than such law permitted the Corporation to provide prior to such amendment), and to the extent authorized in this Section 2.

(1) Actions, Suits and Proceedings Other than By or In the Right of the Corporation. Each Director and Officer shall be indemnified and held harmless by the Corporation against any and all Expenses and Liabilities that are incurred or paid by such Director or Officer or on such Director’s or Officer’s behalf in connection with any Proceeding or any claim, issue or matter therein (other than an action by or in the right of the Corporation), which such Director or Officer is, or is threatened to be made, a party to or participant in by reason of such Director’s or Officer’s Corporate Status, if such Director or Officer acted in good faith and in a manner such Director or Officer reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful.

(2) Actions, Suits and Proceedings By or In the Right of the Corporation. Each Director and Officer shall be indemnified and held harmless by the Corporation against any and all Expenses that are incurred by such Director or Officer or on such Director’s or Officer’s behalf in connection with any Proceeding or any claim, issue or matter therein by or in the right of the Corporation, which such Director or Officer is, or is threatened to be made, a party to or participant in by reason of such Director’s or Officer’s Corporate Status, if such Director or Officer acted in good faith and in a manner such Director or Officer reasonably believed to be in or not opposed to the best interests of the Corporation; provided, however, that no indemnification shall be made under this Section 2(a)(2) in respect of any claim, issue or matter as to which such Director or Officer shall have been finally adjudged by a court of competent jurisdiction to be liable to the Corporation, unless, and only to the extent that, the Court of Chancery or another court in which such Proceeding was brought shall determine upon application that, despite adjudication of liability, but in view of all the circumstances of the case, such Director or Officer is fairly and reasonably entitled to indemnification for such Expenses that such court deems proper.

(3) Survival of Rights. The rights of indemnification provided by this Section 2 shall continue as to a Director or Officer after he or she has ceased to be a Director or Officer and shall inure to the benefit of his or her heirs, executors, administrators and personal representatives.

(4) Actions by Directors or Officers. Notwithstanding the foregoing, the Corporation shall indemnify any Director or Officer seeking indemnification in connection with a Proceeding initiated by such Director or Officer only if such Proceeding (including any parts of such Proceeding not initiated by such Director or Officer) was authorized in advance by the Board of Directors of the Corporation, unless such Proceeding was brought to enforce such Officer’s or Director’s rights to indemnification or, in the case of Directors, advancement of Expenses under these Bylaws in accordance with the provisions set forth herein.

SECTION 3. Indemnification of Non-Officer Employees. Subject to the operation of Section 4 of this Article V of these Bylaws, each Non-Officer Employee may, in the discretion of the Board of Directors of the Corporation, be indemnified by the Corporation to the fullest extent authorized by the DGCL, as the same exists or may hereafter be amended, against any or all Expenses and Liabilities that are incurred by such Non-Officer Employee or on such Non-Officer Employee’s behalf in connection with any threatened, pending or completed Proceeding, or any claim, issue or matter therein, which such Non-Officer Employee is, or is threatened to be made, a party to or participant in

by reason of such Non-Officer Employee's Corporate Status, if such Non-Officer Employee acted in good faith and in a manner such Non-Officer Employee reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was

unlawful. The rights of indemnification provided by this Section 3 shall exist as to a Non-Officer Employee after he or she has ceased to be a Non-Officer Employee and shall inure to the benefit of his or her heirs, personal representatives, executors and administrators. Notwithstanding the foregoing, the Corporation may indemnify any Non-Officer Employee seeking indemnification in connection with a Proceeding initiated by such Non-Officer Employee only if such Proceeding was authorized in advance by the Board of Directors of the Corporation.

SECTION 4. Determination. Unless ordered by a court, no indemnification shall be provided pursuant to this Article V to a Director, to an Officer or to a Non-Officer Employee unless a determination shall have been made that such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal Proceeding, such person had no reasonable cause to believe his or her conduct was unlawful. Such determination shall be made by (a) a majority vote of the Disinterested Directors, even though less than a quorum of the Board of Directors, (b) a committee comprised of Disinterested Directors, such committee having been designated by a majority vote of the Disinterested Directors (even though less than a quorum), (c) if there are no such Disinterested Directors, or if a majority of Disinterested Directors so directs, by independent legal counsel in a written opinion, or (d) by the stockholders of the Corporation.

SECTION 5. Advancement of Expenses to Directors Prior to Final Disposition.

(a) The Corporation shall advance all Expenses incurred by or on behalf of any Director in connection with any Proceeding in which such Director is involved by reason of such Director's Corporate Status within thirty (30) days after the receipt by the Corporation of a written statement from such Director requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by such Director and shall be preceded or accompanied by an undertaking by or on behalf of such Director to repay any Expenses so advanced if it shall ultimately be determined that such Director is not entitled to be indemnified against such Expenses. Notwithstanding the foregoing, the Corporation shall advance all Expenses incurred by or on behalf of any Director seeking advancement of expenses hereunder in connection with a Proceeding initiated by such Director only if such Proceeding (including any parts of such Proceeding not initiated by such Director) was (i) authorized by the Board of Directors of the Corporation, or (ii) brought to enforce such Director's rights to indemnification or advancement of Expenses under these Bylaws.

(b) If a claim for advancement of Expenses hereunder by a Director is not paid in full by the Corporation within thirty (30) days after receipt by the Corporation of documentation of Expenses and the required undertaking, such Director may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim and if successful in whole or in part, such Director shall also be entitled to be paid the expenses of prosecuting such claim. The failure of the Corporation (including its Board of Directors or any committee thereof, independent legal counsel, or stockholders) to make a determination concerning the permissibility of such advancement of Expenses under this Article V shall not be a defense to an action brought by a Director for recovery of the unpaid amount of an advancement claim and shall not create a presumption that such advancement is not permissible. The burden of proving that a Director is not entitled to an advancement of expenses shall be on the Corporation.

(c) In any suit brought by the Corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the Corporation shall be entitled to recover such expenses upon a final adjudication that the Director has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 6. Advancement of Expenses to Officers and Non-Officer Employees Prior to Final Disposition.

(a) The Corporation may, at the discretion of the Board of Directors of the Corporation, advance any or all Expenses incurred by or on behalf of any Officer or any Non-Officer Employee in connection with any Proceeding in which such person is involved by reason of his or her Corporate Status as an Officer or Non-Officer Employee upon the receipt by the Corporation of a statement or statements from such Officer or Non-Officer Employee requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by such Officer or Non-Officer Employee and shall be preceded or accompanied by an undertaking by or on behalf of such person to repay any Expenses so

advanced if it shall ultimately be determined that such Officer or Non-Officer Employee is not entitled to be indemnified against such Expenses.

(b) In any suit brought by the Corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the Corporation shall be entitled to recover such expenses upon a final adjudication that the Officer or Non-Officer Employee has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 7. Contractual Nature of Rights.

(a) The provisions of this Article V shall be deemed to be a contract between the Corporation and each Director and Officer entitled to the benefits hereof at any time while this Article V is in effect, in consideration of such person's past or current and any future performance of services for the Corporation. Neither amendment, repeal or modification of any provision of this Article V nor the adoption of any provision of the Certificate of Incorporation inconsistent with this Article V shall eliminate or reduce any right conferred by this Article V in respect of any act or omission occurring, or any cause of action or claim that accrues or arises or any state of facts existing, at the time of or before such amendment, repeal, modification or adoption of an inconsistent provision (even in the case of a proceeding based on such a state of facts that is commenced after such time), and all rights to indemnification and advancement of Expenses granted herein or arising out of any act or omission shall vest at the time of the act or omission in question, regardless of when or if any proceeding with respect to such act or omission is commenced. The rights to indemnification and to advancement of expenses provided by, or granted pursuant to, this Article V shall continue notwithstanding that the person has ceased to be a director or officer of the Corporation and shall inure to the benefit of the estate, heirs, executors, administrators, legatees and distributes of such person.

(b) If a claim for indemnification hereunder by a Director or Officer is not paid in full by the Corporation within sixty (60) days after receipt by the Corporation of a written claim for indemnification, such Director or Officer may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim, and if successful in whole or in part, such Director or Officer shall also be entitled to be paid the expenses of prosecuting such claim. The failure of the Corporation (including its Board of Directors or any committee thereof, independent legal counsel, or stockholders) to make a determination concerning the permissibility of such indemnification under this Article V shall not be a defense to an action brought by a Director or Officer for recovery of the unpaid amount of an indemnification claim and shall not create a presumption that such indemnification is not permissible. The burden of proving that a Director or Officer is not entitled to indemnification shall be on the Corporation.

(c) In any suit brought by a Director or Officer to enforce a right to indemnification hereunder, it shall be a defense that such Director or Officer has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 8. Non-Exclusivity of Rights. The rights to indemnification and to advancement of Expenses set forth in this Article V shall not be exclusive of any other right which any Director, Officer, or Non-Officer Employee may have or hereafter acquire under any statute, provision of the Certificate or these Bylaws, agreement, vote of stockholders or Disinterested Directors or otherwise.

SECTION 9. Insurance. The Corporation may maintain insurance, at its expense, to protect itself and any Director, Officer or Non-Officer Employee against any liability of any character asserted against or incurred by the Corporation or any such Director, Officer or Non-Officer Employee, or arising out of any such person's Corporate Status, whether or not the Corporation would have the power to indemnify such person against such liability under the DGCL or the provisions of this Article V.

SECTION 10. Other Indemnification. The Corporation's obligation, if any, to indemnify or provide advancement of Expenses to any person under this Article V as a result of such person serving, at the request of the Corporation, as a director, partner, trustee, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall be reduced by any amount such person may collect as indemnification or advancement of Expenses from such other corporation, partnership, joint venture, trust, employee benefit plan or enterprise (the "Primary Indemnitor"). Any indemnification or advancement of Expenses under this Article V owed by the Corporation as a result of a person serving, at the request of the Corporation, as a director, partner, trustee, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall only be in excess of, and shall be secondary to, the indemnification or advancement of Expenses available from the applicable Primary Indemnitor(s) and any applicable insurance policies.

## ARTICLE VI

## Miscellaneous Provisions

SECTION 1. Fiscal Year. The fiscal year of the Corporation shall be determined by the Board of Directors.

SECTION 2. Seal. The Board of Directors shall have power to adopt and alter the seal of the Corporation.

SECTION 3. Execution of Instruments. All deeds, leases, transfers, contracts, bonds, notes and other obligations to be entered into by the Corporation in the ordinary course of its business without director action may be executed on behalf of the Corporation by the Chairman of the Board, if one is elected, the President or the Treasurer or any other officer, employee or agent of the Corporation as the Board of Directors or the executive committee of the Board may authorize.

SECTION 4. Voting of Securities. Unless the Board of Directors otherwise provides, the Chairman of the Board, if one is elected, the President or the Treasurer may waive notice of and act on behalf of the Corporation, or appoint another person or persons to act as proxy or attorney in fact for the Corporation with or without discretionary power and/or power of substitution, at any meeting of stockholders or shareholders of any other corporation or organization, any of whose securities are held by the Corporation.

SECTION 5. Resident Agent. The Board of Directors may appoint a resident agent upon whom legal process may be served in any action or proceeding against the Corporation.

SECTION 6. Corporate Records. The original or attested copies of the Certificate, Bylaws and records of all meetings of the incorporators, stockholders and the Board of Directors and the stock transfer books, which shall contain the names of all stockholders, their record addresses and the amount of stock held by each, may be kept outside the State of Delaware and shall be kept at the principal office of the Corporation, at an office of its counsel, at an office of its transfer agent or at such other place or places as may be designated from time to time by the Board of Directors.

SECTION 7. Certificate. All references in these Bylaws to the Certificate shall be deemed to refer to the Amended and Restated Certificate of Incorporation of the Corporation, as amended and/or restated and in effect from time to time.

SECTION 8. Amendment of Bylaws.

(a) Amendment by Directors. Except as provided otherwise by law, these Bylaws may be amended or repealed by the Board of Directors by the affirmative vote of a majority of the directors then in office.

(b) Amendment by Stockholders. These Bylaws may be amended or repealed at any Annual Meeting, or special meeting of stockholders called for such purpose in accordance with these Bylaws, by the affirmative vote of at least seventy-five percent (75%) of the outstanding shares entitled to vote on such amendment or repeal, voting together as a single class; provided, however, that if the Board of Directors recommends that stockholders approve such amendment or repeal at such meeting of stockholders, such amendment or repeal shall only require the affirmative vote of the majority of the outstanding shares entitled to vote on such amendment or repeal, voting together as a single class. Notwithstanding the foregoing, stockholder approval shall not be required unless mandated by the Certificate, these Bylaws, or other applicable law.

SECTION 9. Notices. If mailed, notice to stockholders shall be deemed given when deposited in the mail, postage prepaid, directed to the stockholder at such stockholder’s address as it appears on the records of the Corporation. Without limiting the manner by which notice otherwise may be given to stockholders, any notice to stockholders may be given by electronic transmission in the manner provided in Section 232 of the DGCL.

SECTION 10. Waivers. A written waiver of any notice, signed by a stockholder or director, or waiver by electronic transmission by such person, whether given before or after the time of the event for which notice is to be given, shall be deemed equivalent to the notice required to be given to such person. Neither the business to be transacted at, nor the purpose of, any meeting need be specified in such a waiver.

SECTION 11. Exclusive Jurisdiction of Delaware Courts or the Federal District Courts of the United States. Unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any state law claims for (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law or the Corporation's Certificate of Incorporation or Bylaws, or (iv) any action asserting a claim against the Corporation governed by the internal affairs doctrine. Unless the Corporation consents in writing to the selection of an alternative forum, the federal district courts of the United States shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended. Any person or entity purchasing or otherwise acquiring any interest in shares of capital stock of the Corporation shall be deemed to have notice of and consented to the provisions of this Section 11.

Adopted by the Board of Directors effective as of December 17, 2020

**Exhibit 4.5**

**DESCRIPTION OF THE REGISTRANT'S SECURITIES**
**REGISTERED PURSUANT TO SECTION 12 OF THE**
**SECURITIES EXCHANGE ACT OF 1934**

As of December 31, 2019, Fate Therapeutics, Inc. (the "Company," "we," "us," and "our") had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended: our Common Stock (as defined below).

## DESCRIPTION OF CAPITAL STOCK

The following description of our Common Stock and Preferred Stock (collectively, the "Capital Stock") is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to our Amended and Restated Certificate of Incorporation ("Certificate of Incorporation"), the Certificate of Designation of Preferences, Rights and Limitations of the Class A Preferred filed with the Delaware Secretary of State on November 22, 2016 (the "Certificate of Designation") and our Amended and Restated Bylaws ("Bylaws"), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.6 is a part, and by applicable law. We encourage you to read our Certificate of Incorporation, Certificate of Designation, our Bylaws and the applicable provisions of the Delaware General Corporation Law for additional information.

### Authorized Capital Stock

Our authorized capital stock consists of 150,000,000 shares of common stock, par value $0.001 per share (the "Common Stock"),and 5,000,000 shares of preferred stock, par value $0.001 per share (the "Preferred Stock"). 2,819,549 shares of our authorized Preferred Stock have been designated as Class A Convertible Preferred Stock.

### Common Stock

The holders of our Common Stock are entitled to one vote for each share held on all matters submitted to a vote of the stockholders. The holders of our Common Stock do not have any cumulative voting rights. Holders of our Common Stock are entitled to receive ratably any dividends declared by our board of directors (the "Board") out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding Preferred Stock. Our Common Stock has no preemptive rights, conversion rights or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution or winding up, holders of our Common Stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding Preferred Stock. All outstanding shares are fully paid and nonassessable.

#### *Exchange Listing*

Our Common Stock is listed on The Nasdaq Global Market under the symbol "FATE."

#### *Transfer Agent and Registrar*

The transfer agent and registrar for our Common Stock is American Stock Transfer & Trust Company, LLC.

**Preferred Stock**

***Undesignated Preferred Stock***

Our Board was initially authorized to issue up to 5,000,000 shares of Preferred Stock in one or more series without stockholder approval. As a result of the designation and issuance of 2,819,549 shares of Class A Convertible Preferred Stock described below, our Board is authorized to designate and issue up to 2,180,451 remaining shares of Preferred Stock. Our Board may determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of Preferred Stock, any or all of which may be more favorable than the rights of our Common Stock. The issuance of our Preferred Stock could adversely affect the voting power of holders of Common Stock and the likelihood that such holders will receive dividend payments and payments upon our liquidation. In addition, the issuance of Preferred Stock could have the effect of delaying, deferring or preventing a change in control of our company or other corporate action.

***Class A Convertible Preferred Stock***

Each share of Class A Convertible Preferred Stock (the "Preferred Shares") is convertible into five shares of Common Stock (subject to adjustment for stock dividends, stock splits, combinations and the like). In the event of our liquidation, dissolution or winding up, holders of Preferred Shares will participate *pari passu* with the holders of our Common Stock in any distribution of proceeds, pro rata based on the number of shares held by each such holder. The Preferred Shares generally have no voting rights. Holders of the Preferred Shares are entitled to receive, on an as-converted-to-common-stock basis, dividends that are equal to dividends actually paid on shares of Common Stock, when, as and if such dividends are paid on shares of the Common Stock.

**Anti-Takeover Effects of Our Certificate of Incorporation and Our Bylaws**

Our Certificate of Incorporation and Bylaws include a number of provisions that may have the effect of delaying, deferring or discouraging another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our Board rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

***Board Composition and Filling Vacancies***. Our Certificate of Incorporation provides for the division of our Board into three classes serving staggered three-year terms, with one class being elected each year. Our Certificate of Incorporation also provides that directors may be removed only for cause and then only by the affirmative vote of the holders of 75% or more of the shares then entitled to vote at an election of directors. Furthermore, any vacancy on our Board, however occurring, including a vacancy resulting from an increase in the size of our Board, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum.

***No Written Consent of Stockholders***. Our Certificate of Incorporation provides that all stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting, and that stockholders may not take any action by written consent in lieu of a meeting.

***Meetings of Stockholders***. Our Certificate of Incorporation and Bylaws provide that only a majority of the members of our Board then in office may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Our Bylaws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

***Advance Notice Requirements.*** Our Bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our Bylaws specify the requirements as to form and content of all stockholders' notices.

***Amendment to Certificate of Incorporation and Bylaws***. As required by the Delaware General Corporation Law, any amendment of our Certificate of Incorporation must first be approved by a majority of our Board, and if required by law or our Certificate of Incorporation, must thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment and a majority of the outstanding shares of each class entitled to vote thereon as a class, except that the amendment of the provisions relating to stockholder action, board composition, limitation of liability and the amendment of our Certificate of Incorporation must be approved by not less than 75% of the outstanding shares entitled to vote on the amendment, and not less than 75% of the outstanding shares of each class entitled to vote thereon as a class. Our Bylaws may be amended by the affirmative vote of a majority of the directors then in office, subject to any limitations set forth in the Bylaws; and may also be amended by the affirmative vote of at least 75% of the outstanding shares entitled to vote on the amendment, or, if our Board recommends that the stockholders approve the amendment, by the affirmative vote of the majority of the outstanding shares entitled to vote on the amendment, in each case voting together as a single class.

***Undesignated Preferred Stock.*** Our Certificate of Incorporation provides for 5,000,000 authorized shares of Preferred Stock, of which 2,819,549 shares have been designated as Class A Convertible Preferred Stock. The existence of authorized but unissued shares of undesignated Preferred Stock may enable our Board to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our Board were to determine that a takeover proposal is not in the best interests of our stockholders, our Board could cause shares of Preferred Stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our Certificate of Incorporation grants our Board broad power to establish the rights and preferences of authorized and unissued shares of Preferred Stock. The issuance of shares of Preferred Stock could decrease the amount of earnings and assets available for distribution to holders of shares of Common Stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

***Exclusive Jurisdiction of Certain Actions***. Our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our Certificate of Incorporation or our Bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine. Although we believe this provision benefits us by providing increased consistency in the application of Delaware law in the types of lawsuits to which it applies, the provision may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar exclusive forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could rule that this provision in our Certificate of Incorporation is inapplicable or unenforceable.

**Section 203 of the Delaware General Corporation Law**

We are subject to the provisions of Section 203 of the Delaware General Corporation Law, or Section 203. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, 15% or more of the corporation's voting stock.

Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions: before the stockholder became interested, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or at or after the time the stockholder became interested, the business combination was approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

A Delaware corporation may "opt out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have not opted out of these provisions. As a result, mergers or other takeover or change in control attempts of us may be discouraged or prevented.

**Exhibit 10.2**

**FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

SECTION 1. GENERAL PURPOSE OF THE PLAN; DEFINITIONS

The name of the plan is the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan (the "Plan"). The purpose of the Plan is to encourage and enable the officers, employees, Non-Employee Directors and other key persons (including Consultants) of Fate Therapeutics, Inc. (the "Company") and its Subsidiaries upon whose judgment, initiative and efforts the Company largely depends for the successful conduct of its business to acquire a proprietary interest in the Company. It is anticipated that providing such persons with a direct stake in the Company's welfare will assure a closer identification of their interests with those of the Company and its stockholders, thereby stimulating their efforts on the Company's behalf and strengthening their desire to remain with the Company.

The following terms shall be defined as set forth below:

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

"*Administrator*" means either the Board or the compensation committee of the Board or a similar committee performing the functions of the compensation committee and which is comprised of not less than two Non-Employee Directors who are independent.

"*Award*" or "*Awards*," except where referring to a particular category of grant under the Plan, shall include Incentive Stock Options, Non-Qualified Stock Options, Stock Appreciation Rights, Restricted Stock Units, Restricted Stock Awards, Unrestricted Stock Awards, Cash-Based Awards, Performance Share Awards and Dividend Equivalent Rights.

"*Award Certificate*" means a written or electronic document setting forth the terms and provisions applicable to an Award granted under the Plan. Each Award Certificate is subject to the terms and conditions of the Plan.

"*Board*" means the Board of Directors of the Company.

"*Cash-Based Award*" means an Award entitling the recipient to receive a cash-denominated payment.

"*Code*" means the Internal Revenue Code of 1986, as amended, and any successor Code, and related rules, regulations and interpretations.

"*Consultant*" means any natural person that provides bona fide services to the Company, and such services are not in connection with the offer or sale of securities in a capital-raising transaction and do not directly or indirectly promote or maintain a market for the Company's securities.
*"Covered Employee"* means an employee who is a "Covered Employee" within the meaning of Section 162(m) of the Code.

*"Dividend Equivalent Right"* means an Award entitling the grantee to receive credits based on cash dividends that would have been paid on the shares of Stock specified in the Dividend

Equivalent Right (or other award to which it relates) if such shares had been issued to and held by the grantee.

*"Effective Date"* means the date on which the Plan became effective as set forth in Section 21.

*"Exchange Act"* means the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder.

*"Fair Market Value"* of the Stock on any given date means the fair market value of the Stock determined in good faith by the Administrator; provided, however, that if the Stock is admitted to quotation on the National Association of Securities Dealers Automated Quotation System ("NASDAQ"), NASDAQ Global Market or another national securities exchange, the determination shall be made by reference to market quotations. If there are no market quotations for such date, the determination shall be made by reference to the last date preceding such date for which there are market quotations.

*"Incentive Stock Option"* means any Stock Option designated and qualified as an "incentive stock option" as defined in Section 422 of the Code.

*"Initial Public Offering"* means the consummation of the first underwritten, firm commitment public offering pursuant to an effective registration statement under the Act covering the offer and sale by the Company of its equity securities, or such other event as a result of or following which the Stock shall be publicly held.

*"Non-Employee Director"* means a member of the Board who is not also an employee of the Company or any Subsidiary.

*"Non-Qualified Stock Option"* means any Stock Option that is not an Incentive Stock Option.

*"Option"* or *"Stock Option"* means any option to purchase shares of Stock granted pursuant to Section 5.

*"Performance-Based Award"* means any Restricted Stock Award, Restricted Stock Units, Performance Share Award or Cash-Based Award granted to a Covered Employee that is intended to qualify as "performance-based compensation" under Section 162(m) of the Code and the regulations promulgated thereunder.

*"Performance Criteria"* means the criteria that the Administrator selects for purposes of establishing the Performance Goal or Performance Goals for an individual for a Performance Cycle. The Performance Criteria (which shall be applicable to the organizational level specified by the Administrator, including, but not limited to, the Company or a unit, division, group, or Subsidiary of the Company) that will be used to establish Performance Goals are limited to the following: total shareholder return, earnings before interest, taxes, depreciation and amortization, net income (loss) (either before or after interest, taxes, depreciation and/or amortization), changes in the market price of the Stock, economic value-added, funds from operations or similar measure, sales or revenue, development, clinical or regulatory milestones, acquisitions or strategic transactions, operating income (loss), cash flow (including, but not limited to, operating cash flow and free cash flow), return on capital, assets, equity, or investment, stockholder returns, return on sales, gross or net profit levels, productivity, expense, margins, operating efficiency, customer satisfaction, working capital, earnings (loss) per share of Stock, sales or

market shares and number of customers, any of which may be measured either in absolute terms or as compared to any incremental increase or as compared to results of a peer group.

*"Performance Cycle"* means one or more periods of time, which may be of varying and overlapping durations, as the Administrator may select, over which the attainment of one or more Performance Criteria will be measured for the purpose of determining a grantee's right to and the payment of a Restricted Stock Award, Restricted Stock Units, Performance Share Award or Cash-Based Award, the vesting and/or payment of which is subject to the attainment of one or more Performance Goals. Each such period shall not be less than 12 months.

*"Performance Goals"* means, for a Performance Cycle, the specific goals established in writing by the Administrator for a Performance Cycle based upon the Performance Criteria.

*"Performance Share Award"* means an Award entitling the recipient to acquire shares of Stock upon the attainment of specified Performance Goals.

*"Restricted Stock Award"* means an Award of shares of Stock subject to such restrictions and conditions as the Administrator may determine at the time of grant.

*"Restricted Stock Units"* means an Award of phantom stock units to a grantee.

*"Sale Event"* shall mean (i) the sale of all or substantially all of the assets of the Company on a consolidated basis to an unrelated person or entity, (ii) a merger, reorganization or consolidation pursuant to which the holders of the Company's outstanding voting power and outstanding stock immediately prior to such transaction do not own a majority of the outstanding voting power and outstanding stock or other equity interests of the resulting or successor entity (or its ultimate parent, if applicable) immediately upon completion of such transaction, (iii) the sale of all of the Stock of the Company to an unrelated person, entity or group thereof acting in concert, or (iv) any other transaction in which the owners of the Company's outstanding voting power immediately prior to such transaction do not own at least a majority of the outstanding voting power of the Company or any successor entity immediately upon completion of the transaction other than as a result of the acquisition of securities directly from the Company.

"*Sale Price*" means the value as determined by the Administrator of the consideration payable, or otherwise to be received by stockholders, per share of Stock pursuant to a Sale Event.

*"Section 409A"* means Section 409A of the Code and the regulations and other guidance promulgated thereunder.

*"Stock"* means the Common Stock, par value $0.001 per share, of the Company, subject to adjustments pursuant to Section 3.

*"Stock Appreciation Right"* means an Award entitling the recipient to receive shares of Stock having a value equal to the excess of the Fair Market Value of the Stock on the date of exercise over the exercise price of the Stock Appreciation Right multiplied by the number of shares of Stock with respect to which the Stock Appreciation Right shall have been exercised.

*"Subsidiary"* means any corporation or other entity (other than the Company) in which the Company has at least a 50 percent interest, either directly or indirectly.

*"Ten Percent Owner"* means an employee who owns or is deemed to own (by reason of the attribution rules of Section 424(d) of the Code) more than 10 percent of the combined voting power of all classes of stock of the Company or any parent or subsidiary corporation.

*"Unrestricted Stock Award"* means an Award of shares of Stock free of any restrictions.

SECTION 2. ADMINISTRATION OF PLAN; ADMINISTRATOR AUTHORITY TO SELECT GRANTEES AND DETERMINE AWARDS

(a) Administration of Plan. The Plan shall be administered by the Administrator.

(b) Powers of Administrator. The Administrator shall have the power and authority to grant Awards consistent with the terms of the Plan, including the power and authority:

(i) to select the individuals to whom Awards may from time to time be granted;

(ii) to determine the time or times of grant, and the extent, if any, of Incentive Stock Options, Non-Qualified Stock Options, Stock Appreciation Rights, Restricted Stock Awards, Restricted Stock Units, Unrestricted Stock Awards, Cash-Based Awards, Performance Share Awards and Dividend Equivalent Rights, or any combination of the foregoing, granted to any one or more grantees;

(iii) to determine the number of shares of Stock to be covered by any Award;

(iv) to determine and modify from time to time the terms and conditions, including restrictions, not inconsistent with the terms of the Plan, of any Award, which terms and conditions may differ among individual Awards and grantees, and to approve the forms of Award Certificates;

(v) to accelerate at any time the exercisability or vesting of all or any portion of any Award;

(vi) subject to the provisions of Section 5(b), to extend at any time the period in which Stock Options may be exercised; and

(vii) at any time to adopt, alter and repeal such rules, guidelines and practices for administration of the Plan and for its own acts and proceedings as it shall deem advisable; to interpret the terms and provisions of the Plan and any Award (including related written instruments); to make all determinations it deems advisable for the administration of the Plan; to decide all disputes arising in connection with the Plan; and to otherwise supervise the administration of the Plan.

All decisions and interpretations of the Administrator shall be binding on all persons, including the Company and Plan grantees.

(c) Delegation of Authority to Grant Awards. Subject to applicable law, the Administrator, in its discretion, may delegate to the Chief Executive Officer of the Company all or part of the Administrator's authority and duties with respect to the granting of Awards to individuals who are (i) not subject to the reporting and other provisions of Section 16 of the Exchange Act and (ii) not Covered Employees. Any such delegation by the Administrator shall include a limitation as to the amount of Awards that may be granted during the period of the delegation and shall contain guidelines as to the determination of the exercise price and the vesting criteria. The Administrator may revoke or amend the terms of a delegation at any time but such action shall

not invalidate any prior actions of the Administrator's delegate or delegates that were consistent with the terms of the Plan.

(d) Award Certificate. Awards under the Plan shall be evidenced by Award Certificates that set forth the terms, conditions and limitations for each Award which may include, without limitation, the term of an Award and the provisions applicable in the event employment or service terminates.

(e) Indemnification. Neither the Board nor the Administrator, nor any member of either or any delegate thereof, shall be liable for any act, omission, interpretation, construction or determination made in good faith in connection with the Plan, and the members of the Board and the Administrator (and any delegate thereof) shall be entitled in all cases to indemnification and reimbursement by the Company in respect of any claim, loss, damage or expense (including, without limitation, reasonable attorneys' fees) arising or resulting therefrom to the fullest extent permitted by law and/or under the Company's articles or bylaws or any directors' and officers' liability insurance coverage which may be in effect from time to time and/or any indemnification agreement between such individual and the Company.

(f) Non-U.S. Award Recipients. Notwithstanding any provision of the Plan to the contrary, in order to comply with the laws in other countries in which the Company and its Subsidiaries operate or have employees or other individuals eligible for Awards, the Administrator, in its sole discretion, shall have the power and authority to: (i) determine which Subsidiaries shall be covered by the Plan; (ii) determine which individuals outside the United States are eligible to participate in the Plan; (iii) modify the terms and conditions of any Award granted to individuals outside the United States to comply with applicable foreign laws; (iv) establish subplans and modify exercise procedures and other terms and procedures, to the extent the Administrator determines such actions to be necessary or advisable (and such subplans and/or modifications shall be attached to this Plan as appendices); provided, however, that no such subplans and/or modifications shall increase the share limitations contained in Section 3(a) hereof; and (v) take any action, before or after an Award is made, that the Administrator determines to be necessary or advisable to obtain approval or comply with any local governmental regulatory exemptions or approvals. Notwithstanding the foregoing, the Administrator may not take any actions hereunder, and no Awards shall be granted, that would violate the Exchange Act or any other applicable United States securities law, the Code, or any other applicable United States governing statute or law.

SECTION 3. STOCK ISSUABLE UNDER THE PLAN; MERGERS; SUBSTITUTION

(a) Stock Issuable. The maximum number of shares of Stock reserved and available for issuance under the Plan shall be the sum of (i) 8,865,538 shares (the "Initial Limit"), plus (ii) on January 1, 2018 and each January 1 thereafter, the number of shares of Stock reserved and available for issuance under the Plan shall be cumulatively increased by four percent (4%) of the number of shares of Stock issued and outstanding on the immediately preceding December 31 or such lesser number of shares of Stock as determined by the Administrator in its sole discretion (the "Annual Increase") plus (iii) the shares underlying any Awards granted under the Company's 2007 Equity Incentive Plan that are forfeited, canceled, held back upon exercise of an Option or settlement of an Award to cover the exercise price or tax withholding, reacquired by the Company prior to vesting, satisfied without the issuance of Stock or otherwise terminated (other than by exercise), subject, in all cases, to adjustment as provided in Section 3(b). Subject to such overall limitation, the maximum aggregate number of shares of Stock that may be issued in the form of Incentive Stock Options under the Plan shall not exceed the Initial Limit as cumulatively increased on January 1, 2018 and on each January 1 thereafter by the lesser of (i) the Annual Increase for such year or (ii) 729,000 shares of Stock, subject, in all cases, to adjustment as provided in Section 3(b). For purposes of this limitation, the shares of Stock underlying any Awards under the Plan that are forfeited, canceled, held back upon exercise of an Option or settlement of an Award to cover the exercise price or tax withholding, reacquired by the Company prior to vesting, satisfied without the issuance of Stock or otherwise terminated

(other than by exercise) shall be added back to the shares of Stock available for issuance under the Plan. Subject to such overall limitations, shares of Stock may be issued up to such maximum number pursuant to any type or types of Award; provided, however, that Stock Options or Stock Appreciation Rights with respect to no more than 500,000 shares may be granted to any one individual grantee during any one calendar year period. The shares available for issuance under the Plan may be authorized but unissued shares of Stock or shares of Stock reacquired by the Company.

(b) Changes in Stock. Subject to Section 3(d) hereof, if, as a result of any reorganization, recapitalization, reclassification, stock dividend, stock split, reverse stock split or other similar change in the Company's capital stock, the outstanding shares of Stock are increased or decreased or are exchanged for a different number or kind of shares or other securities of the Company, or additional shares or new or different shares or other securities of the Company or other non-cash assets are distributed with respect to such shares of Stock or other securities, or, if, as a result of any merger or consolidation, sale of all or substantially all of the assets of the Company, the outstanding shares of Stock are converted into or exchanged for securities of the Company or any successor entity (or a parent or subsidiary thereof), the Administrator shall make an appropriate or proportionate adjustment in (i) the maximum number of shares reserved for issuance under the Plan, including the maximum number of shares that may be issued in the form of Incentive Stock Options, (ii) the number of Stock Options or Stock Appreciation Rights that can be granted to any one individual grantee and the maximum number of shares that may be granted under a Performance-Based Award, (iii) the number and kind of shares or other securities subject to any then outstanding Awards under the Plan, (iv) the repurchase price, if any, per share subject to each outstanding Restricted Stock Award, and (v) the exercise price for each share subject to any then outstanding Stock Options and Stock Appreciation Rights under the Plan, without changing the aggregate exercise price (i.e., the exercise price multiplied by the number of Stock Options and Stock Appreciation Rights) as to which such Stock Options and Stock Appreciation Rights remain exercisable. The Administrator shall also make equitable or proportionate adjustments in the number of shares subject to outstanding Awards and the exercise price and the terms of outstanding Awards to take into consideration cash dividends paid other than in the ordinary course or any other extraordinary corporate event. The adjustment by the Administrator shall be final, binding and conclusive. No fractional shares of Stock shall be issued under the Plan resulting from any such adjustment, but the Administrator in its discretion may make a cash payment in lieu of fractional shares.

(c) Mergers and Other Transactions. Except as the Administrator may otherwise specify with respect to particular Awards in the relevant Award Certificate, in the case of and subject to the consummation of a Sale Event, the parties thereto may cause the assumption or continuation of

Awards theretofore granted by the successor entity, or the substitution of such Awards with new Awards of the successor entity or parent thereof, with appropriate adjustment as to the number and kind of shares and, if appropriate, the per share exercise prices, as such parties shall agree. To the extent that the parties to such Sale Event do not provide for the assumption, continuation or substitution of Awards, then upon the effective time of the Sale Event, the Plan and all outstanding Awards granted hereunder shall terminate. In such case, except as may be otherwise provided in the relevant Award Certificate, all Stock Options and Stock Appreciation Rights with time-based vesting conditions or restrictions that are not vested and/or exercisable immediately prior to the effective time of the Sale Event shall become fully vested and exercisable as of the effective time of the Sale Event, all other Awards with time-based vesting, conditions or restrictions shall become fully vested and nonforfeitable as of the effective time of the Sale Event, and all Awards with conditions and restrictions relating to the attainment of performance goals may become vested and nonforfeitable in connection with a Sale Event in the Administrator's discretion or to the extent specified in the relevant Award Certificate. In the event of such termination, (i) the Company shall have the option (in its sole discretion) to make or provide for a cash payment to the grantees holding Options and Stock Appreciation Rights, in exchange for the cancellation thereof, in an amount equal to the difference between (A) the Sale Price multiplied by the number of shares of Stock subject to outstanding Options and Stock Appreciation Rights (to the extent then exercisable at prices not in excess of the Sale Price) and (B) the aggregate exercise price of all such outstanding Options and Stock Appreciation Rights; or (ii) each grantee shall be permitted, within a specified period of time prior to the consummation of the Sale Event as determined by the Administrator, to exercise all outstanding Options and Stock Appreciation Rights (to the extent then exercisable) held by such grantee. The Company shall also have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the grantees holding other Awards in an amount equal to the Sale Price multiplied by the number of vested shares of Stock under such Awards.

(d) Substitute Awards. The Administrator may grant Awards under the Plan in substitution for stock and stock based awards held by employees, directors or other key persons of another corporation in connection with the merger or consolidation of the employing corporation with the Company or a Subsidiary or the acquisition by the Company or a Subsidiary of property or stock of the employing corporation. The Administrator may direct that the substitute awards be granted on such terms and conditions as the Administrator considers appropriate in the circumstances. Any substitute Awards granted under the Plan shall not count against the share limitation set forth in Section 3(a).

SECTION 4. ELIGIBILITY

Grantees under the Plan will be such full or part-time officers and other employees, Non-Employee Directors and key persons (including Consultants) of the Company and its Subsidiaries as are selected from time to time by the Administrator in its sole discretion.

SECTION 5. STOCK OPTIONS

Any Stock Option granted under the Plan shall be in such form as the Administrator may from time to time approve.

Stock Options granted under the Plan may be either Incentive Stock Options or Non-Qualified Stock Options. Incentive Stock Options may be granted only to employees of the Company or

any Subsidiary that is a “subsidiary corporation” within the meaning of Section 424(f) of the Code. To the extent that any Option does not qualify as an Incentive Stock Option, it shall be deemed a Non-Qualified Stock Option.

Stock Options granted pursuant to this Section 5 shall be subject to the following terms and conditions and shall contain such additional terms and conditions, not inconsistent with the terms of the Plan, as the Administrator shall deem desirable. If the Administrator so determines, Stock Options may be granted in lieu of cash compensation at the optionee’s election, subject to such terms and conditions as the Administrator may establish.

(a) Exercise Price. The exercise price per share for the Stock covered by a Stock Option granted pursuant to this Section 5 shall be determined by the Administrator at the time of grant but shall not be less than 100 percent of the Fair Market Value on the date of grant. In the case of an Incentive Stock Option that is granted to a Ten Percent Owner, the option price of such Incentive Stock Option shall be not less than 110 percent of the Fair Market Value on the grant date.

(b) Option Term. The term of each Stock Option shall be fixed by the Administrator, but no Stock Option shall be exercisable more than ten years after the date the Stock Option is granted. In the case of an Incentive Stock Option that is granted to a Ten Percent Owner, the term of such Stock Option shall be no more than five years from the date of grant.

(c) Exercisability; Rights of a Stockholder. Stock Options shall become exercisable at such time or times, whether or not in installments, as shall be determined by the Administrator at or after the grant date. The Administrator may at any time accelerate the exercisability of all or any portion of any Stock Option. An optionee shall have the rights of a stockholder only as to shares acquired upon the exercise of a Stock Option and not as to unexercised Stock Options.

(d) Method of Exercise. Stock Options may be exercised in whole or in part, by giving written or electronic notice of exercise to the Company, specifying the number of shares to be purchased. Payment of the purchase price may be made by one or more of the following methods to the extent provided in the Option Award Certificate:

(i) In cash, by certified or bank check or other instrument acceptable to the Administrator;

(ii) Through the delivery (or attestation to the ownership) of shares of Stock that are not then subject to restrictions under any Company plan. Such surrendered shares shall be valued at Fair Market Value on the exercise date;

(iii) By the optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company for the purchase price; provided that in the event the optionee chooses to pay the purchase price as so provided, the optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; or

(iv) With respect to Stock Options that are not Incentive Stock Options, by a “net exercise” arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price.

Payment instruments will be received subject to collection. The transfer to the optionee on the records of the Company or of the transfer agent of the shares of Stock to be purchased pursuant to the exercise of a Stock Option will be contingent upon receipt from the optionee (or a purchaser acting in his stead in accordance with the provisions of the Stock Option) by the Company of the full purchase price for such shares and the fulfillment of any other requirements contained in the Option Award Certificate or applicable provisions of laws (including the satisfaction of any withholding taxes that the Company is obligated to withhold with respect to the optionee). In the event an optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the optionee upon the exercise of the Stock Option shall be net of the number of attested shares. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the exercise of Stock Options, such as a system using an internet website or interactive voice response, then the paperless exercise of Stock Options may be permitted through the use of such an automated system.

(e) Annual Limit on Incentive Stock Options. To the extent required for "incentive stock option" treatment under Section 422 of the Code, the aggregate Fair Market Value (determined as of the time of grant) of the shares of Stock with respect to which Incentive Stock Options granted under this Plan and any other plan of the Company or its parent and subsidiary corporations become exercisable for the first time by an optionee during any calendar year shall not exceed $100,000. To the extent that any Stock Option exceeds this limit, it shall constitute a Non-Qualified Stock Option.

SECTION 6. STOCK APPRECIATION RIGHTS

(a) Exercise Price of Stock Appreciation Rights. The exercise price of a Stock Appreciation Right shall not be less than 100 percent of the Fair Market Value of the Stock on the date of grant.

(b) Grant and Exercise of Stock Appreciation Rights. Stock Appreciation Rights may be granted by the Administrator independently of any Stock Option granted pursuant to Section 5 of the Plan.

(c) Terms and Conditions of Stock Appreciation Rights. Stock Appreciation Rights shall be subject to such terms and conditions as shall be determined from time to time by the Administrator. The term of a Stock Appreciation Right may not exceed ten years.

SECTION 7. RESTRICTED STOCK AWARDS

(a) Nature of Restricted Stock Awards. The Administrator shall determine the restrictions and conditions applicable to each Restricted Stock Award at the time of grant. Conditions may be based on continuing employment (or other service relationship) and/or achievement of pre-established performance goals and objectives. The terms and conditions of each such Award Certificate shall be determined by the Administrator, and such terms and conditions may differ among individual Awards and grantees.

(b) Rights as a Stockholder. Upon the grant of the Restricted Stock Award and payment of any applicable purchase price, a grantee shall have the rights of a stockholder with respect to the voting of the Restricted Stock and receipt of dividends; provided that if the lapse of restrictions

with respect to the Restricted Stock Award is tied to the attainment of performance goals, any dividends paid by the Company during the performance period shall accrue and shall not be paid to the grantee until and to the extent the performance goals are met with respect to the Restricted Stock Award. Unless the Administrator shall otherwise determine, (i) uncertificated Restricted Stock shall be accompanied by a notation on the records of the Company or the transfer agent to the effect that they are subject to forfeiture until such Restricted Stock are vested as provided in Section 7(d) below, and (ii) certificated Restricted Stock shall remain in the possession of the Company until such Restricted Stock is vested as provided in Section 7(d) below, and the grantee shall be required, as a condition of the grant, to deliver to the Company such instruments of transfer as the Administrator may prescribe.

(c) Restrictions. Restricted Stock may not be sold, assigned, transferred, pledged or otherwise encumbered or disposed of except as specifically provided herein or in the Restricted Stock Award Certificate. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 18 below, in writing after the Award is issued, if a grantee's employment (or other service relationship) with the Company and its Subsidiaries terminates for any reason, any Restricted Stock that has not vested at the time of termination shall automatically and without any requirement of notice to such grantee from or other action by or on behalf of, the Company be deemed to have been reacquired by the Company at its original purchase price (if any) from such grantee or such grantee's legal representative simultaneously with such termination of employment (or other service relationship), and thereafter shall cease to represent any ownership of the Company by the grantee or rights of the grantee as a stockholder. Following such deemed reacquisition of unvested Restricted Stock that are represented by physical certificates, a grantee shall surrender such certificates to the Company upon request without consideration.

(d) Vesting of Restricted Stock. The Administrator at the time of grant shall specify the date or dates and/or the attainment of pre-established performance goals, objectives and other conditions on which the non-transferability of the Restricted Stock and the Company's right of repurchase or forfeiture shall lapse. Subsequent to such date or dates and/or the attainment of such pre-established performance goals, objectives and other conditions, the shares on which all restrictions have lapsed shall no longer be Restricted Stock and shall be deemed "vested." Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 18 below, in writing after the Award is issued, a grantee's rights in any shares of Restricted Stock that have not vested shall automatically terminate upon the grantee's termination of employment (or other service relationship) with the Company and its Subsidiaries and such shares shall be subject to the provisions of Section 7(c) above.

SECTION 8. RESTRICTED STOCK UNITS

(a) Nature of Restricted Stock Units. The Administrator shall determine the restrictions and conditions applicable to each Restricted Stock Unit at the time of grant. Conditions may be based on continuing employment (or other service relationship) and/or achievement of pre-established performance goals and objectives. The terms and conditions of each such Award Certificate shall be determined by the Administrator, and such terms and conditions may differ among individual Awards and grantees. At the end of the deferral period, the Restricted Stock Units, to the extent vested, shall be settled in the form of shares of Stock. To the extent that an award of Restricted Stock Units is subject to Section 409A, it may contain such additional terms and conditions as

the Administrator shall determine in its sole discretion in order for such Award to comply with the requirements of Section 409A.

(b) Election to Receive Restricted Stock Units in Lieu of Compensation. The Administrator may, in its sole discretion, permit a grantee to elect to receive a portion of future cash compensation otherwise due to such grantee in the form of an award of Restricted Stock Units. Any such election shall be made in writing and shall be delivered to the Company no later than the date specified by the Administrator and in accordance with Section 409A and such other rules and procedures established by the Administrator. Any such future cash compensation that the grantee elects to defer shall be converted to a fixed number of Restricted Stock Units based on the Fair Market Value of Stock on the date the compensation would otherwise have been paid to the grantee if such payment had not been deferred as provided herein. The Administrator shall have the sole right to determine whether and under what circumstances to permit such elections and to impose such limitations and other terms and conditions thereon as the Administrator deems appropriate. Any Restricted Stock Units that are elected to be received in lieu of cash compensation shall be fully vested, unless otherwise provided in the Award Certificate.

(c) Rights as a Stockholder. A grantee shall have the rights as a stockholder only as to shares of Stock acquired by the grantee upon settlement of Restricted Stock Units; provided, however, that the grantee may be credited with Dividend Equivalent Rights with respect to the phantom stock units underlying his Restricted Stock Units, subject to such terms and conditions as the Administrator may determine.

(d) Termination. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 18 below, in writing after the Award is issued, a grantee's right in all Restricted Stock Units that have not vested shall automatically terminate upon the grantee's termination of employment (or cessation of service relationship) with the Company and its Subsidiaries for any reason.

SECTION 9. UNRESTRICTED STOCK AWARDS

Grant or Sale of Unrestricted Stock. The Administrator may, in its sole discretion, grant (or sell at par value or such higher purchase price determined by the Administrator) an Unrestricted Stock Award under the Plan. Unrestricted Stock Awards may be granted in respect of past services or other valid consideration, or in lieu of cash compensation due to such grantee.

SECTION 10. CASH-BASED AWARDS

Grant of Cash-Based Awards. The Administrator may, in its sole discretion, grant Cash-Based Awards to any grantee in such number or amount and upon such terms, and subject to such conditions, as the Administrator shall determine at the time of grant. The Administrator shall determine the maximum duration of the Cash-Based Award, the amount of cash to which the Cash-Based Award pertains, the conditions upon which the Cash-Based Award shall become vested or payable, and such other provisions as the Administrator shall determine. Each Cash-Based Award shall specify a cash-denominated payment amount, formula or payment ranges as determined by the Administrator. Payment, if any, with respect to a Cash-Based Award shall be made in accordance with the terms of the Award and may be made in cash or in shares of Stock, as the Administrator determines.

SECTION 11. PERFORMANCE SHARE AWARDS

(a) Nature of Performance Share Awards. The Administrator may, in its sole discretion, grant Performance Share Awards independent of, or in connection with, the granting of any other Award under the Plan. The Administrator shall determine whether and to whom Performance Share Awards shall be granted, the Performance Goals, the periods during which performance is to be measured, which may not be less than one year except in the case of a Sale Event, and such other limitations and conditions as the Administrator shall determine.

(b) Rights as a Stockholder. A grantee receiving a Performance Share Award shall have the rights of a stockholder only as to shares actually received by the grantee under the Plan and not with respect to shares subject to the Award but not actually received by the grantee. A grantee shall be entitled to receive shares of Stock under a Performance Share Award only upon satisfaction of all conditions specified in the Performance Share Award Certificate (or in a performance plan adopted by the Administrator).

(c) Termination. Except as may otherwise be provided by the Administrator either in the Award agreement or, subject to Section 18 below, in writing after the Award is issued, a grantee's rights in all Performance Share Awards shall automatically terminate upon the grantee's termination of employment (or cessation of service relationship) with the Company and its Subsidiaries for any reason.

SECTION 12. PERFORMANCE-BASED AWARDS TO COVERED EMPLOYEES

(a) Performance-Based Awards. Any employee or other key person providing services to the Company and who is selected by the Administrator may be granted one or more Performance-Based Awards in the form of a Restricted Stock Award, Restricted Stock Units, Performance Share Awards or Cash-Based Award payable upon the attainment of Performance Goals that are established by the Administrator and relate to one or more of the Performance Criteria, in each case on a specified date or dates or over any period or periods determined by the Administrator. The Administrator shall define in an objective fashion the manner of calculating the Performance Criteria it selects to use for any Performance Cycle. Depending on the Performance Criteria used to establish such Performance Goals, the Performance Goals may be expressed in terms of overall Company performance or the performance of a division, business unit, or an individual. The Administrator, in its discretion, may adjust or modify the calculation of Performance Goals for such Performance Cycle in order to prevent the dilution or enlargement of the rights of an individual (i) in the event of, or in anticipation of, any unusual or extraordinary corporate item, transaction, event or development, (ii) in recognition of, or in anticipation of, any other unusual or nonrecurring events affecting the Company, or the financial statements of the Company, or (iii) in response to, or in anticipation of, changes in applicable laws, regulations, accounting principles, or business conditions provided however, that the Administrator may not exercise such discretion in a manner that would increase the Performance-Based Award granted to a Covered Employee. Each Performance-Based Award shall comply with the provisions set forth below.

(b) Grant of Performance-Based Awards. With respect to each Performance-Based Award granted to a Covered Employee, the Administrator shall select, within the first 90 days of a Performance Cycle (or, if shorter, within the maximum period allowed under Section 162(m) of the Code) the Performance Criteria for such grant, and the Performance Goals with respect to

each Performance Criterion (including a threshold level of performance below which no amount will become payable with respect to such Award). Each Performance-Based Award will specify the amount payable, or the formula for determining the amount payable, upon achievement of the various applicable performance targets. The Performance Criteria established by the Administrator may be (but need not be) different for each Performance Cycle and different Performance Goals may be applicable to Performance-Based Awards to different Covered Employees.

(c) Payment of Performance-Based Awards. Following the completion of a Performance Cycle, the Administrator shall meet to review and certify in writing whether, and to what extent, the Performance Goals for the Performance Cycle have been achieved and, if so, to also calculate and certify in writing the amount of the Performance-Based Awards earned for the Performance Cycle. The Administrator shall then determine the actual size of each Covered Employee's Performance-Based Award, and, in doing so, may reduce or eliminate the amount of the Performance-Based Award for a Covered Employee if, in its sole judgment, such reduction or elimination is appropriate.

(d) Maximum Award Payable. The maximum Performance-Based Award payable to any one Covered Employee under the Plan for a Performance Cycle is 500,000 shares of Stock (subject to adjustment as provided in Section 3(c) hereof) or $2,000,000 in the case of a Performance-Based Award that is a Cash-Based Award.

SECTION 13. DIVIDEND EQUIVALENT RIGHTS

(a) Dividend Equivalent Rights. A Dividend Equivalent Right may be granted hereunder to any grantee as a component of an award of Restricted Stock Units, Restricted Stock Award or Performance Share Award or as a freestanding award. The terms and conditions of Dividend Equivalent Rights shall be specified in the Award Certificate. Dividend equivalents credited to the holder of a Dividend Equivalent Right may be paid currently or may be deemed to be reinvested in additional shares of Stock, which may thereafter accrue additional equivalents. Any such reinvestment shall be at Fair Market Value on the date of reinvestment or such other price as may then apply under a dividend reinvestment plan sponsored by the Company, if any. Dividend Equivalent Rights may be settled in cash or shares of Stock or a combination thereof, in a single installment or installments. A Dividend Equivalent Right granted as a component of an award of Restricted Stock Units or Restricted Stock Award with performance vesting or Performance Share Award shall provide that such Dividend Equivalent Right shall be settled only upon settlement or payment of, or lapse of restrictions on, such other Award, and that such Dividend Equivalent Right shall expire or be forfeited or annulled under the same conditions as such other Award.

(b) Interest Equivalents. Any Award under this Plan that is settled in whole or in part in cash on a deferred basis may provide in the grant for interest equivalents to be credited with respect to such cash payment. Interest equivalents may be compounded and shall be paid upon such terms and conditions as may be specified by the grant.

(c) Termination. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 18 below, in writing after the Award is issued, a grantee's rights in all Dividend Equivalent Rights or interest equivalents granted as a component of an award of Restricted Stock Units, Restricted Stock Award or Performance Share Award that has not vested

shall automatically terminate upon the grantee's termination of employment (or cessation of service relationship) with the Company and its Subsidiaries for any reason.

SECTION 14. TRANSFERABILITY OF AWARDS

(a) Transferability. Except as provided in Section 14(b) below, during a grantee's lifetime, his or her Awards shall be exercisable only by the grantee, or by the grantee's legal representative or guardian in the event of the grantee's incapacity. No Awards shall be sold, assigned, transferred or otherwise encumbered or disposed of by a grantee other than by will or by the laws of descent and distribution or pursuant to a domestic relations order. No Awards shall be subject, in whole or in part, to attachment, execution, or levy of any kind, and any purported transfer in violation hereof shall be null and void.

(b) Administrator Action. Notwithstanding Section 14(a), the Administrator, in its discretion, may provide either in the Award Certificate regarding a given Award or by subsequent written approval that the grantee (who is an employee or director) may transfer his or her Non-Qualified Options to his or her immediate family members, to trusts for the benefit of

such family members, or to partnerships in which such family members are the only partners, provided that the transferee agrees in writing with the Company to be bound by all of the terms and conditions of this Plan and the applicable Award. In no event may an Award be transferred by a grantee for value.

(c) Family Member. For purposes of Section 14(b), "family member" shall mean a grantee's child, stepchild, grandchild, parent, stepparent, grandparent, spouse, former spouse, sibling, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including adoptive relationships, any person sharing the grantee's household (other than a tenant of the grantee), a trust in which these persons (or the grantee) have more than 50 percent of the beneficial interest, a foundation in which these persons (or the grantee) control the management of assets, and any other entity in which these persons (or the grantee) own more than 50 percent of the voting interests.

(d) Designation of Beneficiary. Each grantee to whom an Award has been made under the Plan may designate a beneficiary or beneficiaries to exercise any Award or receive any payment under any Award payable on or after the grantee's death. Any such designation shall be on a form provided for that purpose by the Administrator and shall not be effective until received by the Administrator. If no beneficiary has been designated by a deceased grantee, or if the designated beneficiaries have predeceased the grantee, the beneficiary shall be the grantee's estate.

SECTION 15. TAX WITHHOLDING

(a) Payment by Grantee. Each grantee shall, no later than the date as of which the value of an Award or of any Stock or other amounts received thereunder first becomes includable in the gross income of the grantee for Federal income tax purposes, pay to the Company, or make arrangements satisfactory to the Administrator regarding payment of, any Federal, state, or local taxes of any kind required by law to be withheld by the Company with respect to such income. The Company and its Subsidiaries shall, to the extent permitted by law, have the right to deduct any such taxes from any payment of any kind otherwise due to the grantee. The Company's

obligation to deliver evidence of book entry (or stock certificates) to any grantee is subject to and conditioned on tax withholding obligations being satisfied by the grantee.

(b) Payment in Stock. Subject to approval by the Administrator, a grantee may elect to have the Company's minimum required tax withholding obligation satisfied, in whole or in part, by authorizing the Company to withhold from shares of Stock to be issued pursuant to any Award a number of shares with an aggregate Fair Market Value (as of the date the withholding is effected) that would satisfy the withholding amount due.

SECTION 16. SECTION 409A AWARDS

To the extent that any Award is determined to constitute "nonqualified deferred compensation" within the meaning of Section 409A (a "409A Award"), the Award shall be subject to such additional rules and requirements as specified by the Administrator from time to time in order to comply with Section 409A. In this regard, if any amount under a 409A Award is payable upon a "separation from service" (within the meaning of Section 409A) to a grantee who is then considered a "specified employee" (within the meaning of Section 409A), then no such payment shall be made prior to the date that is the earlier of (i) six months and one day after the grantee's separation from service, or (ii) the grantee's death, but only to the extent such delay is necessary to prevent such payment from being subject to interest, penalties and/or additional tax imposed pursuant to Section 409A. Further, the settlement of any such Award may not be accelerated except to the extent permitted by Section 409A.

SECTION 17. TRANSFER, LEAVE OF ABSENCE, ETC.

For purposes of the Plan, the following events shall not be deemed a termination of employment:

(a) a transfer to the employment of the Company from a Subsidiary or from the Company to a Subsidiary, or from one Subsidiary to another; or

(b) an approved leave of absence for military service or sickness, or for any other purpose approved by the Company, if the employee's right to re-employment is guaranteed either by a statute or by contract or under the policy pursuant to which the leave of absence was granted or if the Administrator otherwise so provides in writing.

SECTION 18. AMENDMENTS AND TERMINATION

The Board may, at any time, amend or discontinue the Plan and the Administrator may, at any time, amend or cancel any outstanding Award for the purpose of satisfying changes in law or for any other lawful purpose, but no such action shall adversely affect rights under any outstanding Award without the holder's consent. Except as provided in Section 3(c) or 3(d), without prior stockholder approval, in no event may the Administrator exercise its discretion to reduce the exercise price of outstanding Stock Options or Stock Appreciation Rights or effect repricing through cancellation and re-grants or cancellation of Stock Options or Stock Appreciation Rights in exchange for cash. To the extent required under the rules of any securities exchange or market system on which the Stock is listed, to the extent determined by the Administrator to be required by the Code to ensure that Incentive Stock Options granted under the Plan are qualified under Section 422 of the Code, or to ensure that compensation earned under Awards qualifies as performance-based compensation under Section 162(m) of the Code, Plan amendments shall be subject to approval by the Company stockholders entitled to vote at a meeting of stockholders.

Nothing in this Section 18 shall limit the Administrator's authority to take any action permitted pursuant to Section 3(c) or 3(d).

SECTION 19. STATUS OF PLAN

With respect to the portion of any Award that has not been exercised and any payments in cash, Stock or other consideration not received by a grantee, a grantee shall have no rights greater than those of a general creditor of the Company unless the Administrator shall otherwise expressly determine in connection with any Award or Awards. In its sole discretion, the Administrator may authorize the creation of trusts or other arrangements to meet the Company's obligations to deliver Stock or make payments with respect to Awards hereunder, provided that the existence of such trusts or other arrangements is consistent with the foregoing sentence.

SECTION 20. GENERAL PROVISIONS

(a) No Distribution. The Administrator may require each person acquiring Stock pursuant to an Award to represent to and agree with the Company in writing that such person is acquiring the shares without a view to distribution thereof.

(b) Delivery of Stock Certificates. Stock certificates to grantees under this Plan shall be deemed delivered for all purposes when the Company or a stock transfer agent of the Company shall have mailed such certificates in the United States mail, addressed to the grantee, at the grantee's last known address on file with the Company. Uncertificated Stock shall be deemed delivered for all purposes when the Company or a Stock transfer agent of the Company shall have given to the grantee by electronic mail (with proof of receipt) or by United States mail, addressed to the grantee, at the grantee's last known address on file with the Company, notice of issuance and recorded the issuance in its records (which may include electronic "book entry" records). Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates evidencing shares of Stock pursuant to the exercise of any Award, unless and until the Administrator has determined, with advice of counsel (to the extent the Administrator deems such advice necessary or advisable), that the issuance and delivery of such certificates is in compliance with all applicable laws, regulations of governmental authorities and, if applicable, the requirements of any exchange on which the shares of Stock are listed, quoted or traded. All Stock certificates delivered pursuant to the Plan shall be subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with federal, state or foreign jurisdiction, securities or other laws, rules and quotation system on which the Stock is listed, quoted or traded. The Administrator may place legends on any Stock certificate to reference restrictions applicable to the Stock. In addition to the terms and conditions provided herein, the Administrator may require that an individual make such reasonable covenants, agreements, and representations as the Administrator, in its discretion, deems necessary or advisable in order to comply with any such laws, regulations, or requirements. The Administrator shall have the right to require any individual to comply with any timing or other restrictions with respect to the settlement or exercise of any Award, including a window-period limitation, as may be imposed in the discretion of the Administrator.

(c) Stockholder Rights. Until Stock is deemed delivered in accordance with Section 20(b), no right to vote or receive dividends or any other rights of a stockholder will exist with respect to shares of Stock to be issued in connection with an Award, notwithstanding the exercise of a Stock Option or any other action by the grantee with respect to an Award.

(d) Other Compensation Arrangements; No Employment Rights. Nothing contained in this Plan shall prevent the Board from adopting other or additional compensation arrangements, including trusts, and such arrangements may be either generally applicable or applicable only in specific cases. The adoption of this Plan and the grant of Awards do not confer upon any employee any right to continued employment with the Company or any Subsidiary.

(e) Trading Policy Restrictions. Option exercises and other Awards under the Plan shall be subject to the Company's insider trading policies and procedures, as in effect from time to time.

(f) Forfeiture of Awards under Sarbanes-Oxley Act. If the Company is required to prepare an accounting restatement due to the material noncompliance of the Company, as a result of misconduct, with any financial reporting requirement under the securities laws, then any grantee who is one of the individuals subject to automatic forfeiture under Section 304 of the Sarbanes-Oxley Act of 2002 shall reimburse the Company for the amount of any Award received by such individual under the Plan during the 12-month period following the first public issuance or filing with the United States Securities and Exchange Commission, as the case may be, of the financial document embodying such financial reporting requirement.

SECTION 21. EFFECTIVE DATE OF PLAN

This Plan shall become effective immediately prior to the Company's Initial Public Offering, following stockholder approval of the Plan in accordance with applicable state law, the Company's bylaws and articles of incorporation, and applicable stock exchange rules or pursuant to written consent. No grants of Stock Options and other Awards may be made hereunder after the tenth anniversary of the Effective Date and no grants of Incentive Stock Options may be made hereunder after the tenth anniversary of the date the Plan is approved by the Board.

SECTION 22. GOVERNING LAW

This Plan and all Awards and actions taken thereunder shall be governed by, and construed in accordance with, the laws of the State of Delaware, applied without regard to conflict of law principles.

Amended and Restated by the Board of Directors: December 17, 2020

**FORMS OF AWARD AGREEMENTS**

**UNDER THE**

**2013 STOCK OPTION AND INCENTIVE PLAN**

**NON-QUALIFIED STOCK OPTION AGREEMENT**
**FOR COMPANY EMPLOYEES**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: $ _____

Grant Date: _____

Expiration Date: _____

Vesting Commencement Date: _____

Vesting Schedule: _____

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, this Stock Option shall be treated in accordance with Section 3(c) of the Plan (as defined below); provided, that, in the event that a Terminating Event (as defined the Amended and Restated Employment Agreement entered into by and between the Company (as defined below) and the Optionee, dated as of January 14, 2018 (as amended or superseded from time to time, the "Employment Agreement")) occurs within the Sale Event Period (as defined in the Employment Agreement), subject to the Optionee signing and complying with a separation agreement in the form attached as Exhibit B to the Employment Agreement (the "Separation Agreement and Release") and the Separation Agreement and Release becoming irrevocable pursuant to its terms, all within 60 days after the Date of Termination (as defined in the Employment Agreement), the vesting of all then-unvested Option Shares shall immediately accelerate in full such that as of the Date of Termination, all of the Option Shares shall be 100% vested; provided further, that in the event that a Terminating Event occurs at any time other than during the Sale Event Period, subject to the Optionee signing and complying with the Separation Agreement and Release and the Separation Agreement and Release becoming irrevocable pursuant to its terms, all within 60 days after the Date of Termination, the

vesting of a number of Option Shares representing the number of Option Shares that would have vested had the Optionee remained employed with the Company or a Subsidiary for an additional 12 months following the Date of Termination shall immediately accelerate as of the Date of Termination.

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock") of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market

Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Optionee's Signature

Optionee's name and address:

_____

_____

_____

# RESTRICTED STOCK UNIT AWARD AGREEMENT
# FOR COMPANY EMPLOYEES
# UNDER THE FATE THERAPEUTICS, INC.
# AMENDED AND RESTATED
# 2013 STOCK OPTION AND INCENTIVE PLAN

Name of Grantee: _____

No. of Restricted Stock Units: _____

Grant Date: _____

Vesting Commencement Date: _____

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.001 per share (the "Stock") of the Company.

Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

Vesting of Restricted Stock Units.

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, the Restricted Stock Units shall be treated in accordance with Section 3(c) of the Plan. The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

Termination of Employment. If the Grantee's employment with the Company and its Subsidiaries terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

Issuance of Shares of Stock. Subject to the satisfaction of all applicable withholding tax obligations in accordance with Paragraph 6 below, as soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2

of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Tax Withholding. In connection with the settlement of vested Restricted Stock Units, the Company shall issue the shares of Stock referred to in Paragraph 4 to a broker designated by the Company and acting on behalf and for the account of the Grantee with instructions to (i) sell a number of shares of such Stock sufficient to satisfy the applicable withholding taxes which arise in connection with such settlement, along with any applicable third-party commission, and (ii) remit the proceeds of such sale to the Company. In the event the sale proceeds are insufficient to fully satisfy the applicable withholding taxes, the Grantee authorizes withholding from payroll and any other amounts payable to the Grantee, in the same calendar year, and otherwise agrees to make adequate provision through the submission of cash, a check or its equivalent for any sums required to satisfy the applicable withholding taxes. It is the intent of the parties that this Paragraph 6 comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Agreement will be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act. Unless the withholding tax obligations of the Company and/or any Affiliate thereof are satisfied, the Company shall have no obligation to issue any shares of Stock on the Grantee's behalf pursuant to the vesting of the Restricted Stock Units.

Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as "short-term deferrals" as described in Section 409A of the Code.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Grantee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the

Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Grantee's Signature

Grantee's name and address:

_____

_____

_____

**NON-QUALIFIED STOCK OPTION AGREEMENT**
**FOR COMPANY EMPLOYEES**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: $ _____

Grant Date: _____

Expiration Date: _____

Vesting Commencement Date: _____

Vesting Schedule: _____

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, this Stock Option shall be treated in accordance with Section 3(c) of the Plan (as defined below); provided, that in the event the employment of the Optionee is terminated by the Company (as defined below) without Cause (as defined in the Company's Severance and Change in Control Policy (as amended or superseded from time to time, the "Severance and CIC Policy")) or the Optionee resigns for Good Reason (as defined in the Severance and CIC Policy) at any time following the first anniversary of the Optionee's first day of employment with the Company, then subject to the Optionee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company, the Stock Option (as defined below) shall vest immediately with respect to a number of underlying shares that would have vested had the Optionee remained employed with the Company or a Subsidiary for an additional nine (9) months following the date of termination; provided further, that in the event the Optionee's employment is terminated by the Company (or its successor) without Cause or the Optionee resigns for Good Reason, in either case within the period commencing three months prior to and ending one year after closing of a Sale Event (as defined in the Plan), then subject

to the Optionee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company or its successor or acquirer, the Optionee shall be entitled to full acceleration of vesting of the shares underlying the Stock Option.

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock") of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market

Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____

Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____

Optionee's Signature

Optionee's name and address:

_____

_____

_____

**RESTRICTED STOCK UNIT AWARD AGREEMENT**
**FOR COMPANY EMPLOYEES**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Grantee: _____

No. of Restricted Stock Units: _____

Grant Date: _____

Vesting Commencement Date: _____

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.001 per share (the "Stock") of the Company.

Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

Vesting of Restricted Stock Units; Acceleration.

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, the Restricted Stock Units shall be treated in accordance with Section 3(c) of the Plan; provided, that in the event that a Terminating Event (as defined in the Amended and Restated Employment Agreement entered into by and between the Company and the Grantee, dated as of January 14, 2018 (as amended or superseded from time to time, the "Employment Agreement")) occurs within the Sale Event Period (as defined in the Employment Agreement), then subject to the Grantee signing and complying with a separation agreement in the form attached as Exhibit B to the Employment Agreement (the "Separation Agreement and Release") and the Separation Agreement and Release becoming irrevocable pursuant to its terms, all within 60 days after the Date of Termination (as defined in the Employment Agreement), the vesting of all remaining unvested Restricted Stock Units underlying this Award shall immediately accelerate in full such that as of the Date of Termination, all of the Restricted Stock Units underlying this Award shall be 100% vested; provided further, that in the event that a Terminating Event occurs at any time other than during the Sale Event Period, subject to the Grantee signing and complying with the Separation Agreement and Release and the Separation Agreement and Release becoming irrevocable pursuant to its terms, all within 60 days after the Date of Termination, this Award shall vest immediately with respect to a number of Restricted Stock Units that would have vested

had the Grantee remained employed with the Company for an additional twelve (12) months following the Date of Termination.

The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

Termination of Employment. Subject to Section 2(b), if the Grantee's employment with the Company and its Subsidiaries terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

Issuance of Shares of Stock. Subject to the satisfaction of all applicable withholding tax obligations in accordance with Paragraph 6 below, as soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

Incorporation of Plan. Notwithstanding anything herein to the contrary but subject to Section 2(b) herein, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Tax Withholding. In connection with the settlement of vested Restricted Stock Units, the Company shall issue the shares of Stock referred to in Paragraph 4 to a broker designated by the Company and acting on behalf and for the account of the Grantee with instructions to (i) sell a number of shares of such Stock sufficient to satisfy the applicable withholding taxes which arise in connection with such settlement, along with any applicable third-party commission, and (ii) remit the proceeds of such sale to the Company. In the event the sale proceeds are insufficient to fully satisfy the applicable withholding taxes, the Grantee authorizes withholding from payroll and any other amounts payable to the Grantee, in the same calendar year, and otherwise agrees to make adequate provision through the submission of cash, a check or its equivalent for any sums required to satisfy the applicable withholding taxes. It is the intent of the parties that this Paragraph 6 comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Agreement will be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act. Unless the withholding tax obligations of the Company and/or any Affiliate thereof are satisfied, the Company shall have no obligation to issue any shares of Stock on the Grantee's behalf pursuant to the vesting of the Restricted Stock Units.

Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as "short-term deferrals" as described in Section 409A of the Code.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Grantee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____

Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

_____

Grantee's Signature

Grantee's name and address:

_____

_____

_____

**RESTRICTED STOCK UNIT AWARD AGREEMENT**
**FOR COMPANY EMPLOYEES**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Grantee: _____

No. of Restricted Stock Units: _____

Grant Date: _____

Vesting Commencement Date: _____

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.001 per share (the "Stock") of the Company.

Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

Vesting of Restricted Stock Units; Acceleration.

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, the Restricted Stock Units shall be treated in accordance with Section 3(c) of the Plan; provided, that in the event the employment of the Grantee is terminated by the Company without Cause (as defined in the Company's Severance and Change in Control Policy (as amended or superseded from time to time, the "Severance and CIC Policy")) or the Grantee resigns for Good Reason (as defined in the Severance and CIC Policy) at any time following the first anniversary of the Grantee's first day of employment with the Company, then subject to the Grantee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company, this Award shall vest immediately with respect to a number of Restricted Stock Units that would have vested had the Grantee remained employed with the Company for an additional nine (9) months following the date of termination; provided further, that in the event the Grantee's employment is terminated by the Company (or its successor) without Cause or the Grantee resigns for Good Reason, in either case within the period commencing three months prior to and ending one year after closing of a Sale Event (as defined in the Plan), then subject to the Grantee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company or its successor or acquirer, the

Grantee shall be entitled to full acceleration of vesting of all remaining unvested Restricted Stock Units underlying this Award.

The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

Termination of Employment. Subject to Section 2(b), if the Grantee's employment with the Company and its Subsidiaries terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

Issuance of Shares of Stock. Subject to the satisfaction of all applicable withholding tax obligations in accordance with Paragraph 6 below, as soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

Incorporation of Plan. Notwithstanding anything herein to the contrary but subject to Section 2(b) herein, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Tax Withholding. In connection with the settlement of vested Restricted Stock Units, the Company shall issue the shares of Stock referred to in Paragraph 4 to a broker designated by the Company and acting on behalf and for the account of the Grantee with instructions to (i) sell a number of shares of such Stock sufficient to satisfy the applicable withholding taxes which arise in connection with such settlement, along with any applicable third-party commission, and (ii) remit the proceeds of such sale to the Company. In the event the sale proceeds are insufficient to fully satisfy the applicable withholding taxes, the Grantee authorizes withholding from payroll and any other amounts payable to the Grantee, in the same calendar year, and otherwise agrees to make adequate provision through the submission of cash, a check or its equivalent for any sums required to satisfy the applicable withholding taxes. It is the intent of the parties that this Paragraph 6 comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Agreement will be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act. Unless the withholding tax obligations of the Company and/or any Affiliate thereof are satisfied, the Company shall have no obligation to issue any shares of Stock on the Grantee's behalf pursuant to the vesting of the Restricted Stock Units.

Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as "short-term deferrals" as described in Section 409A of the Code.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Grantee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Grantee's Signature

Grantee's name and address:

_____

_____

_____

**INCENTIVE STOCK OPTION AGREEMENT**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED 2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: _____

Grant Date: _____

Expiration Date: _____

Vesting Commencement Date: _____

Vesting Schedule: _____

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock"), of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the

Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; or (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; or (iv) a combination of (i), (ii) and (iii) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal

representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability, or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

Status of the Stock Option. This Stock Option is intended to qualify as an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended (the "Code"), but the Company does not represent or warrant that this Stock Option qualifies as such.

The Optionee should consult with his or her own tax advisors regarding the tax effects of this Stock Option and the requirements necessary to obtain favorable income tax treatment under Section 422 of the Code, including, but not limited to, holding period requirements. To the extent any portion of this Stock Option does not so qualify as an "incentive stock option," such portion shall be deemed to be a non-qualified stock option. If the Optionee intends to dispose or does dispose (whether by sale, gift, transfer or otherwise) of any Option Shares within the one-year period beginning on the date after the transfer of such shares to him or her, or within the two-year period beginning on the day after the grant of this Stock Option, he or she will so notify the Company within 30 days after such disposition.

Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the

Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Optionee's Signature

Optionee's name and address:

_____

_____

_____

**INCENTIVE STOCK OPTION AGREEMENT**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: _____

Grant Date: _____

Expiration Date: _____

Vesting Commencement Date: _____

Vesting Schedule: _____

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, this Stock Option shall be treated in accordance with Section 3(c) of the Plan (as defined below); provided, that, in the event the employment of the Optionee is terminated by the Company (as defined below) without Cause (as defined in the Company's Severance and Change in Control Policy (as amended or superseded from time to time, the "Severance and CIC Policy")) or the Optionee resigns for Good Reason (as defined in the Severance and CIC Policy) at any time following the first anniversary of the Optionee's first day of employment with the Company, then subject to the Optionee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company, the Stock Option (as defined below) shall vest immediately with respect to a number of underlying shares that would have vested had the Optionee remained employed with the Company or a Subsidiary for an additional nine (9) months following the date of termination. In addition, notwithstanding anything in this Agreement or the Plan to the contrary, in the event the Optionee's employment is terminated by the Company (or its successor) without Cause or the Optionee resigns for Good Reason, in either case within the period commencing three months prior to and ending one year after closing of a Sale Event (as defined in the Plan), then subject to the Optionee's execution and non-

revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company or its successor or acquirer, the Optionee shall be entitled to full acceleration of vesting of the shares underlying the Stock Option.

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock"), of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; or (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; or (iv) a combination of (i), (ii) and (iii) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no

further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability, or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

Status of the Stock Option. This Stock Option is intended to qualify as an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended (the "Code"), but the Company does not represent or warrant that this Stock Option qualifies as such. The Optionee should consult with his or her own tax advisors regarding the tax effects of this Stock Option and the requirements necessary to obtain favorable income tax treatment under Section 422 of the Code, including, but not limited to, holding period requirements. To the extent any portion of this Stock Option does not so qualify as an "incentive stock option," such portion shall be deemed to be a non-qualified stock option. If the Optionee intends to dispose or does dispose (whether by sale, gift, transfer or otherwise) of any Option Shares within the one-year period beginning on the date after the transfer of such shares to him or her, or within the two-year period beginning on the day after the grant of this Stock Option, he or she will so notify the Company within 30 days after such disposition.

Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and

local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____

Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____

Optionee's Signature

Optionee's name and address:

_____

_____

_____

**NON-QUALIFIED STOCK OPTION AGREEMENT**
**FOR NON-EMPLOYEE DIRECTORS**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: $ _____

Vesting Commencement Date: _____

Grant Date: _____

Expiration Date: _____

*See exercisability schedule below.

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above, who is a Director of the Company but is not an employee of the Company, an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock"), of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall be exercisable with respect to the following schedule:

Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination as Director. If the Optionee ceases to be a Director of the Company, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's service as a Director terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Other Termination. If the Optionee ceases to be a Director for any reason other than the Optionee's death or for cause, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date the Optionee ceased to be a Director, for a period of 12 months from the date the Optionee ceased to be a Director or until the Expiration Date, if earlier. If the Optionee ceases to be a Director as a result of a termination for cause, this Stock Option shall terminate in full immediately upon such cessation of the Optionee's service as a Director. Any portion of this Stock Option that is not exercisable on the date the Optionee ceases to be a Director shall terminate immediately and be of no further force or effect.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

No Obligation to Continue as a Director. Neither the Plan nor this Stock Option confers upon the Optionee any rights with respect to continuance as a Director.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant

Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Optionee's Signature

Optionee's name and address:

_____

_____

_____

**NON-QUALIFIED STOCK OPTION AGREEMENT**
**FOR COMPANY EMPLOYEES**
**UNDER THE FATE THERAPEUTICS, INC.**
**AMENDED AND RESTATED**
**2013 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: $ _____
**[FMV on Grant Date]**

Grant Date: _____

Expiration Date: _____

Vesting Commencement Date: _____

Vesting Schedule: _____

Pursuant to the Fate Therapeutics, Inc. Amended and Restated 2013 Stock Option and Incentive Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock") of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended.

Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

Manner of Exercise.

The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____

Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____

Optionee's Signature

Optionee's name and address:

_____

_____

_____

**Exhibit 10.7**

FATE THERAPEUTICS, INC.

AMENDED AND RESTATED NON-EMPLOYEE DIRECTOR COMPENSATION POLICY

The purpose of this Amended and Restated Non-Employee Director Compensation Policy (the "Policy") of Fate Therapeutics, Inc., a Delaware corporation (the "Company"), is to provide a total compensation package that enables the Company to attract and retain, on a long-term basis, high-caliber directors who are not employees or officers of the Company. In furtherance of this purpose, effective as of the date of approval by the Company's Board of Directors (the "Board") of this Policy (the "Effective Date"), all non-employee directors shall be paid compensation for services provided to the Company as set forth below:[1]

**Cash Retainers**

Annual Retainer for Board Membership: $40,000 for general availability and participation in meetings and conference calls of the Board. No additional compensation for attending individual Board meetings.

Additional Annual Retainers for Committee Membership and Service as Chairperson:

| | |
|---|---|
| Board Chairperson: | $ 35,000 |
| Audit Committee Chairperson: | $ 15,000 |
| Audit Committee member: | $ 7,500 |
| Compensation Committee Chairperson: | $ 12,000 |
| Compensation Committee member: | $ 6,000 |
| Nominating and Corporate Governance Committee Chairperson: | $ 10,000 |
| Nominating and Corporate Governance Committee member: | $ 5,000 |
| Science & Technology Committee Chairperson: | $ 12,000 |
| Science & Technology Committee member: | $ 6,000 |

No additional compensation for attending individual committee meetings.

All cash retainers will be paid quarterly, in arrears, or upon the earlier resignation or removal of the non-employee director. Cash retainers owing to non-employee directors shall be annualized, meaning that with respect to non-employee directors who join the Board during the calendar year, such amounts shall be pro-rated based on the number of calendar days served by such director.

[1] This policy shall supersede any prior arrangements between the Company and the directors.

**Equity Retainers**

Initial Equity Grant: One-time option grant to each new non-employee director upon his/her election to the Board after the Effective Date to purchase 25,000 shares of the Company's common stock, par value $0.001 per share ("Common Stock"). Such initial equity grant shall vest in equal monthly installments during the 36 months following the grant date, subject to the director's continued service on the Board.

On the date of each Annual Meeting of Stockholders: Annual option grant to each non-employee director serving on the Board immediately following the Company's annual meeting of stockholders to purchase 12,500 shares of Common Stock. Such annual equity grant shall vest on the earlier of the one-year anniversary of the grant date and the Company's next annual meeting of stockholders, subject to the director's continued service on the Board.

The form of option agreement will give directors up to one year following cessation of service as a director to exercise the options (to the extent vested at the date of such cessation), provided that the director has not been removed for cause.

All of the foregoing option grants will have an exercise price equal to the fair market value of a share of Common Stock on the date of grant.

**Expenses**

The Company shall reimburse all reasonable out-of-pocket expenses incurred by non-employee directors in attending Board and committee meetings.

*Amended and Restated Non-Employee Director Compensation Policy adopted by the Board of Directors on September 9, 2019.*

*Amended and Restated Non-Employee Director Compensation Policy adopted by the Board of Directors on December 17, 2020.*

**Exhibit 10.8**

**FATE THERAPEUTICS, INC.**

**AMENDED AND RESTATED INDUCEMENT EQUITY PLAN**

SECTION 1. GENERAL PURPOSE OF THE PLAN; DEFINITIONS

The name of the plan is the Fate Therapeutics, Inc. Amended and Restated Inducement Equity Plan (the "Plan"). The purpose of the Plan is to enable Fate Therapeutics, Inc. (the "Company") and its Subsidiaries to grant equity awards to induce highly-qualified prospective officers and employees who are not currently employed by the Company or its Subsidiaries to accept employment and to provide them with a proprietary interest in the Company. It is anticipated that providing such persons with a direct stake in the Company's welfare will assure a closer identification of their interests with those of the Company and its stockholders, thereby stimulating their efforts on the Company's behalf and strengthening their desire to remain with the Company. The Company intends that the Plan be reserved for persons to whom the Company may issue securities without stockholder approval as an inducement pursuant to Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc.

The following terms shall be defined as set forth below:

"*Administrator*" means either the Board or the compensation committee of the Board or a similar committee performing the functions of the compensation committee and which is comprised of not less than two Non-Employee Directors who are independent.

"*Award*" or "*Awards,*" except where referring to a particular category of grant under the Plan, shall include Stock Options and Restricted Stock Units.

"*Award Certificate*" means a written or electronic document setting forth the terms and provisions applicable to an Award granted under the Plan. Each Award Certificate is subject to the terms and conditions of the Plan.

"*Board*" means the Board of Directors of the Company.

"*Code*" means the Internal Revenue Code of 1986, as amended, and any successor Code, and related rules, regulations and interpretations.

"*Effective Date*" means the date on which the Plan is approved by the Board as set forth in Section 14.

"*Exchange Act*" means the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder.

"*Fair Market Value*" of the Stock on any given date means the fair market value of the Stock determined in good faith by the Administrator; provided, however, that if the Stock is admitted to quotation on the National Association of Securities Dealers Automated Quotation System ("NASDAQ"), NASDAQ Global Market or another national securities exchange, the determination shall be made by reference to market quotations. If there are no market quotations

for such date, the determination shall be made by reference to the last date preceding such date for which there are market quotations.

"*Non-Employee Director*" means a member of the Board who is not also an employee of the Company or any Subsidiary.

"*Option*" or "*Stock Option*" means any option to purchase shares of Stock granted pursuant to Section 5.

"*Restricted Stock Units*" means an Award of phantom stock units to a grantee.

"*Sale Event*" shall mean (i) the sale of all or substantially all of the assets of the Company on a consolidated basis to an unrelated person or entity, (ii) a merger, reorganization or consolidation pursuant to which the holders of the Company's outstanding voting power and outstanding stock immediately prior to such transaction do not own a majority of the outstanding voting power and outstanding stock or other equity interests of the resulting or successor entity (or its ultimate parent, if applicable) immediately upon completion of such transaction, (iii) the sale of all of the Stock of the Company to an unrelated person, entity or group thereof acting in concert, or (iv) any other transaction in which the owners of the Company's outstanding voting power immediately prior to such transaction do not own at least a majority of the outstanding voting power of the Company or any successor entity immediately upon completion of the transaction other than as a result of the acquisition of securities directly from the Company.

"*Sale Price*" means the value as determined by the Administrator of the consideration payable, or otherwise to be received by stockholders, per share of Stock pursuant to a Sale Event.

"*Section 409A*" means Section 409A of the Code and the regulations and other guidance promulgated thereunder.

"*Stock*" means the Common Stock, par value $0.001 per share, of the Company, subject to adjustments pursuant to Section 3.

"*Subsidiary*" means any corporation or other entity (other than the Company) in which the Company has at least a 50 percent interest, either directly or indirectly.

SECTION 2. ADMINISTRATION OF PLAN; ADMINISTRATOR AUTHORITY TO SELECT GRANTEES AND DETERMINE AWARDS

(a) Administration of Plan. The Plan shall be administered by the Administrator.

(b) Powers of Administrator. The Administrator shall have the power and authority to grant Awards consistent with the terms of the Plan, including the power and authority:

(i) to select the individuals to whom Awards may from time to time be granted;

(ii) to determine the time or times of grant, and the extent, if any, of Awards granted to any one or more grantees;

(iii) to determine the number of shares of Stock to be covered by any Award;

(iv) to determine and modify from time to time the terms and conditions, including restrictions, not inconsistent with the terms of the Plan, of any Award, which terms and conditions may differ among individual Awards and grantees, and to approve the forms of Award Certificates;

(v) to accelerate at any time the exercisability or vesting of all or any portion of any Award;

(vi) subject to the provisions of Section 5(b), to extend at any time the period in which Stock Options may be exercised; and

(vii) at any time to adopt, alter and repeal such rules, guidelines and practices for administration of the Plan and for its own acts and proceedings as it shall deem advisable; to interpret the terms and provisions of the Plan and any Award (including related written instruments); to make all determinations it deems advisable for the administration of the Plan; to decide all disputes arising in connection with the Plan; and to otherwise supervise the administration of the Plan.

All decisions and interpretations of the Administrator shall be binding on all persons, including the Company and Plan grantees.

(c) Award Certificate. Awards under the Plan shall be evidenced by Award Certificates that set forth the terms, conditions and limitations for each Award which may include, without limitation, the term of an Award and the provisions applicable in the event employment or service terminates.

(d) Indemnification. Neither the Board nor the Administrator, nor any member of either or any delegate thereof, shall be liable for any act, omission, interpretation, construction or determination made in good faith in connection with the Plan, and the members of the Board and the Administrator (and any delegate thereof) shall be entitled in all cases to indemnification and reimbursement by the Company in respect of any claim, loss, damage or expense (including, without limitation, reasonable attorneys' fees) arising or resulting therefrom to the fullest extent permitted by law and/or under the Company's articles or bylaws or any directors' and officers' liability insurance coverage which may be in effect from time to time and/or any indemnification agreement between such individual and the Company.

(e) Foreign Award Recipients. Notwithstanding any provision of the Plan to the contrary, in order to comply with the laws in other countries in which the Company and its Subsidiaries operate or have employees or other individuals eligible for Awards, the Administrator, in its sole discretion, shall have the power and authority to: (i) determine which Subsidiaries shall be covered by the Plan; (ii) determine which individuals outside the United States are eligible to participate in the Plan; (iii) modify the terms and conditions of any Award granted to individuals outside the United States to comply with applicable foreign laws; (iv) establish subplans and modify exercise procedures and other terms and procedures, to the extent the Administrator determines such actions to be necessary or advisable (and such subplans and/or modifications shall be attached to this Plan as appendices); provided, however, that no

such subplans and/or modifications shall increase the share limitation contained in Section 3(a) hereof; and (v) take any action, before or after an Award is made, that the Administrator determines to be necessary or advisable to obtain approval or comply with any local governmental regulatory exemptions or approvals. Notwithstanding the foregoing, the Administrator may not take any actions hereunder, and no Awards shall be granted, that would violate the Exchange Act or any other applicable United States securities law, the Code, or any other applicable United States governing statute or law.

SECTION 3. STOCK ISSUABLE UNDER THE PLAN; MERGERS; SUBSTITUTION

(a) Stock Issuable. The maximum number of shares of Stock reserved and available for issuance under the Plan shall be 1,870,822 shares, subject to adjustment as provided in Section 3(b). For purposes of this limitation, the shares of Stock underlying any Awards under the Plan that are forfeited, canceled, held back upon exercise of an Option or settlement of an Award to cover the exercise price or tax withholding, reacquired by the Company prior to vesting, satisfied without the issuance of Stock, or otherwise terminated (other than by exercise or settlement) shall be added back to the shares of Stock available for issuance under the Plan. Subject to such overall limitation, shares of Stock may be issued up to such maximum number pursuant to any type or types of Award. The shares available for issuance under the Plan may be authorized but unissued shares of Stock or shares of Stock reacquired by the Company.

(b) Changes in Stock. Subject to Section 3(c) hereof, if, as a result of any reorganization, recapitalization, reclassification, stock dividend, stock split, reverse stock split or other similar change in the Company's capital stock, the outstanding shares of Stock are increased or decreased or are exchanged for a different number or kind of shares or other securities of the Company, or additional shares or new or different shares or other securities of the Company or other non-cash assets are distributed with respect to such shares of Stock or other securities, or, if, as a result of any merger or consolidation, sale of all or substantially all of the assets of the Company, the outstanding shares of Stock are converted into or exchanged for securities of the Company or any successor entity (or a parent or subsidiary thereof), the Administrator shall make an appropriate or proportionate adjustment in (i) the maximum number of shares reserved for issuance under the Plan, (ii) the number and kind of shares or other securities subject to any then outstanding Awards under the Plan, and (iii) the exercise price for each share subject to any then outstanding Stock Options under the Plan, without changing the aggregate exercise price (i.e., the exercise price multiplied by the number of Stock Options) as to which such Stock Options remain exercisable. The Administrator shall also make equitable or proportionate adjustments in the number of shares subject to outstanding Awards and the exercise price and the terms of outstanding Awards to take into consideration cash dividends paid other than in the ordinary course or any other extraordinary corporate event. The adjustment by the Administrator shall be final, binding and conclusive. No fractional shares of Stock shall be issued under the Plan resulting from any such adjustment, but the Administrator in its discretion may make a cash payment in lieu of fractional shares.

(c) Mergers and Other Transactions. Except as the Administrator may otherwise specify with respect to particular Awards in the relevant Award Certificate, in the case of and subject to the consummation of a Sale Event, the parties thereto may cause the assumption or continuation of Awards theretofore granted by the successor entity, or the substitution of such

Awards with new Awards of the successor entity or parent thereof, with appropriate adjustment as to the number and kind of shares and, if appropriate, the per share exercise prices, as such parties shall agree. To the extent the parties to such Sale Event do not provide for the assumption, continuation or substitution of Awards, then upon the effective time of the Sale Event, the Plan and all outstanding Awards granted hereunder shall terminate. In such case, except as may be otherwise provided in the relevant Award Certificate, all Stock Options with time-based vesting conditions or restrictions that are not vested and/or exercisable immediately prior to the effective time of the Sale Event shall become fully vested and exercisable as of the effective time of the Sale Event, all Restricted Stock Units with time-based vesting, conditions or restrictions shall become fully vested and nonforfeitable as of the effective time of the Sale Event, and all Awards with conditions and restrictions relating to the attainment of performance goals may become vested and nonforfeitable in connection with a Sale Event in the Administrator's discretion or to the extent specified in the relevant Award Certificate. In the event of such termination, (i) the Company shall have the option (in its sole discretion) to make or provide for a cash payment to the grantees holding Stock Options, in exchange for the cancellation thereof, in an amount equal to the difference between (A) the Sale Price multiplied by the number of shares of Stock subject to outstanding Stock Options (to the extent then exercisable at prices not in excess of the Sale Price) and (B) the aggregate exercise price of all such outstanding Stock Options; or (ii) each grantee shall be permitted, within a specified period of time prior to the consummation of the Sale Event as determined by the Administrator, to exercise all outstanding Options (to the extent then exercisable) held by such grantee. The Company shall also have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the grantees holding Restricted Stock Units in an amount equal to the Sale Price multiplied by the number of vested shares of Stock underlying such Restricted Stock Units.

SECTION 4. ELIGIBILITY

Grantees under the Plan will be only such individuals to whom the Company may issue securities without stockholder approval in accordance with Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc., as selected from time to time by the Administrator in its sole discretion.

SECTION 5. STOCK OPTIONS

Any Stock Option granted under the Plan shall be in such form as the Administrator may from time to time approve. All Stock Options granted under the Plan shall be non-qualified stock options.

Stock Options granted pursuant to this Section 5 shall be subject to the following terms and conditions and shall contain such additional terms and conditions, not inconsistent with the terms of the Plan, as the Administrator shall deem desirable.

(a) Exercise Price. The exercise price per share for the Stock covered by a Stock Option granted pursuant to this Section 5 shall be determined by the Administrator at the time of grant but shall not be less than 100 percent of the Fair Market Value on the date of grant.

(b) Option Term. The term of each Stock Option shall be fixed by the Administrator, but no Stock Option shall be exercisable more than ten years after the date the Stock Option is granted.

(c) Exercisability; Rights of a Stockholder. Stock Options shall become exercisable at such time or times, whether or not in installments, as shall be determined by the Administrator at or after the grant date. The Administrator may at any time accelerate the exercisability of all or any portion of any Stock Option. An optionee shall have the rights of a stockholder only as to shares acquired upon the exercise of a Stock Option and not as to unexercised Stock Options.

(d) Method of Exercise. Stock Options may be exercised in whole or in part, by giving written or electronic notice of exercise to the Company, specifying the number of shares to be purchased. Payment of the purchase price may be made by one or more of the following methods to the extent provided in the Option Award Certificate:

(i) In cash, by certified or bank check or other instrument acceptable to the Administrator;

(ii) Through the delivery (or attestation to the ownership) of shares of Stock that are not then subject to restrictions under any Company plan. Such surrendered shares shall be valued at Fair Market Value on the exercise date;

(iii) By the optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company for the purchase price; provided that in the event the optionee chooses to pay the purchase price as so provided, the optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; or

(iv) By a “net exercise” arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price.

Payment instruments will be received subject to collection. The transfer to the optionee on the records of the Company or of the transfer agent of the shares of Stock to be purchased pursuant to the exercise of a Stock Option will be contingent upon receipt from the optionee (or a purchaser acting in his stead in accordance with the provisions of the Stock Option) by the Company of the full purchase price for such shares and the fulfillment of any other requirements contained in the Option Award Certificate or applicable provisions of laws (including the satisfaction of any withholding taxes that the Company is obligated to withhold with respect to the optionee). In the event an optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the optionee upon the exercise of the Stock Option shall be net of the number of attested shares. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the exercise of Stock Options, such as a system using an internet website or interactive voice response, then the paperless exercise of Stock Options may be permitted through the use of such an automated system.

SECTION 6. RESTRICTED STOCK UNITS

(a) Nature of Restricted Stock Units. The Administrator shall determine the restrictions and conditions applicable to each Restricted Stock Unit at the time of grant. Conditions may be based on continuing employment (or other service relationship) and/or achievement of pre-established performance goals and objectives. The terms and conditions of each such Award Certificate shall be determined by the Administrator, and such terms and conditions may differ among individual Awards and grantees. At the end of the deferral period, the Restricted Stock Units, to the extent vested, shall be settled in the form of shares of Stock. To the extent that an award of Restricted Stock Units is subject to Section 409A, it may contain such additional terms and conditions as the Administrator shall determine in its sole discretion in order for such Award to comply with the requirements of Section 409A.

(b) Rights as a Stockholder. A grantee shall have the rights as a stockholder only as to shares of Stock acquired by the grantee upon settlement of Restricted Stock Units.

(c) Termination. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 11 below, in writing after the Award is issued, a grantee's right in all Restricted Stock Units that have not vested shall automatically terminate upon the grantee's termination of employment (or cessation of service relationship) with the Company and its Subsidiaries for any reason.

SECTION 7. Transferability of Awards

(a) Transferability. Except as provided in Section 7(b) below, during a grantee's lifetime, his or her Awards shall be exercisable only by the grantee, or by the grantee's legal representative or guardian in the event of the grantee's incapacity. No Awards shall be sold, assigned, transferred or otherwise encumbered or disposed of by a grantee other than by will or by the laws of descent and distribution or pursuant to a domestic relations order. No Awards shall be subject, in whole or in part, to attachment, execution, or levy of any kind, and any purported transfer in violation hereof shall be null and void.

(b) Administrator Action. Notwithstanding Section 7(a), the Administrator, in its discretion, may provide either in the Award Certificate regarding a given Award or by subsequent written approval that the grantee (who is an employee) may transfer his or her Stock Options to his or her immediate family members, to trusts for the benefit of such family members, or to partnerships in which such family members are the only partners, provided that the transferee agrees in writing with the Company to be bound by all of the terms and conditions of this Plan and the applicable Award. In no event may an Award be transferred by a grantee for value.

(c) Family Member. For purposes of Section 7(b), "family member" shall mean a grantee's child, stepchild, grandchild, parent, stepparent, grandparent, spouse, former spouse, sibling, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including adoptive relationships, any person sharing the grantee's household (other than a tenant of the grantee), a trust in which these persons (or the grantee) have more than 50 percent of the beneficial interest, a foundation in which these persons (or the

grantee) control the management of assets, and any other entity in which these persons (or the grantee) own more than 50 percent of the voting interests.

(d) Designation of Beneficiary. Each grantee to whom an Award has been made under the Plan may designate a beneficiary or beneficiaries to exercise any Award or receive any payment under any Award payable on or after the grantee's death. Any such designation shall be on a form provided for that purpose by the Administrator and shall not be effective until received by the Administrator. If no beneficiary has been designated by a deceased grantee, or if the designated beneficiaries have predeceased the grantee, the beneficiary shall be the grantee's estate.

SECTION 8. TAX WITHHOLDING

(a) Payment by Grantee. Each grantee shall, no later than the date as of which the value of an Award or of any Stock or other amounts received thereunder first becomes includable in the gross income of the grantee for Federal income tax purposes, pay to the Company, or make arrangements satisfactory to the Administrator regarding payment of, any Federal, state, or local taxes of any kind required by law to be withheld by the Company with respect to such income. The Company and its Subsidiaries shall, to the extent permitted by law, have the right to deduct any such taxes from any payment of any kind otherwise due to the grantee. The Company's obligation to deliver evidence of book entry (or stock certificates) to any grantee is subject to and conditioned on tax withholding obligations being satisfied by the grantee.

(b) Payment in Stock. Subject to approval by the Administrator, a grantee may elect to have the Company's minimum required tax withholding obligation satisfied, in whole or in part, by authorizing the Company to withhold from shares of Stock to be issued pursuant to any Award a number of shares with an aggregate Fair Market Value (as of the date the withholding is effected) that would satisfy the withholding amount due. The Administrator may also require Awards to be subject to mandatory share withholding up to the required withholding amount. For purposes of share withholding, the Fair Market Value of withheld shares shall be determined in the same manner as the value of Stock includible in income of the Participants.

SECTION 9. Section 409A awards

To the extent that any Award is determined to constitute "nonqualified deferred compensation" within the meaning of Section 409A (a "409A Award"), the Award shall be subject to such additional rules and requirements as specified by the Administrator from time to time in order to comply with Section 409A. In this regard, if any amount under a 409A Award is payable upon a "separation from service" (within the meaning of Section 409A) to a grantee who is then considered a "specified employee" (within the meaning of Section 409A), then no such payment shall be made prior to the date that is the earlier of (i) six months and one day after the grantee's separation from service, or (ii) the grantee's death, but only to the extent such delay is necessary to prevent such payment from being subject to interest, penalties and/or additional tax imposed pursuant to Section 409A. Further, the settlement of any such Award may not be accelerated except to the extent permitted by Section 409A.

SECTION 10. Termination of Employment, TRANSFER, LEAVE OF ABSENCE, ETC.

Termination of Employment. If the grantee's employer ceases to be a Subsidiary, the grantee shall be deemed to have terminated employment for purposes of the Plan.

(a) For purposes of the Plan, the following events shall not be deemed a termination of employment:

(i) a transfer to the employment of the Company from a Subsidiary or from the Company to a Subsidiary, or from one Subsidiary to another; or

(ii) an approved leave of absence for military service or sickness, or for any other purpose approved by the Company, if the employee's right to re-employment is guaranteed either by a statute or by contract or under the policy pursuant to which the leave of absence was granted or if the Administrator otherwise so provides in writing.

SECTION 11. AMENDMENTS AND TERMINATION

The Board may, at any time, amend or discontinue the Plan and the Administrator may, at any time, amend or cancel any outstanding Award for the purpose of satisfying changes in law or for any other lawful purpose, but no such action shall adversely affect rights under any outstanding Award without the holder's consent. Except as provided in Section 3(b) or 3(c), without prior stockholder approval, in no event may the Administrator exercise its discretion to reduce the exercise price of outstanding Stock Options or effect repricing through cancellation and re-grants or cancellation of Stock Options in exchange for cash. Nothing in this Section 11 shall limit the Administrator's authority to take any action permitted pursuant to Section 3(b) or 3(c).

SECTION 12. STATUS OF PLAN

With respect to the portion of any Award that has not been settled or exercised and any payments in cash, Stock or other consideration not received by a grantee, a grantee shall have no rights greater than those of a general creditor of the Company unless the Administrator shall otherwise expressly determine in connection with any Award or Awards. In its sole discretion, the Administrator may authorize the creation of trusts or other arrangements to meet the Company's obligations to deliver Stock or make payments with respect to Awards hereunder, provided that the existence of such trusts or other arrangements is consistent with the foregoing sentence.

SECTION 13. GENERAL PROVISIONS

(a) No Distribution. The Administrator may require each person acquiring Stock pursuant to an Award to represent to and agree with the Company in writing that such person is acquiring the shares without a view to distribution thereof.

(b) Delivery of Stock Certificates. Stock certificates to grantees under this Plan shall be deemed delivered for all purposes when the Company or a stock transfer agent of the Company shall have mailed such certificates in the United States mail, addressed to the grantee,

at the grantee's last known address on file with the Company. Uncertificated Stock shall be deemed delivered for all purposes when the Company or a Stock transfer agent of the Company shall have given to the grantee by electronic mail (with proof of receipt) or by United States mail, addressed to the grantee, at the grantee's last known address on file with the Company, notice of issuance and recorded the issuance in its records (which may include electronic "book entry" records). Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates evidencing shares of Stock pursuant to the exercise of any Award, unless and until the Administrator has determined, with advice of counsel (to the extent the Administrator deems such advice necessary or advisable), that the issuance and delivery of such certificates is in compliance with all applicable laws, regulations of governmental authorities and, if applicable, the requirements of any exchange on which the shares of Stock are listed, quoted or traded. All Stock certificates delivered pursuant to the Plan shall be subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with federal, state or foreign jurisdiction, securities or other laws, rules and quotation system on which the Stock is listed, quoted or traded. The Administrator may place legends on any Stock certificate to reference restrictions applicable to the Stock. In addition to the terms and conditions provided herein, the Administrator may require that an individual make such reasonable covenants, agreements, and representations as the Administrator, in its discretion, deems necessary or advisable in order to comply with any such laws, regulations, or requirements. The Administrator shall have the right to require any individual to comply with any timing or other restrictions with respect to the settlement or exercise of any Award, including a window-period limitation, as may be imposed in the discretion of the Administrator.

(c) Stockholder Rights. Until Stock is deemed delivered in accordance with Section 13(b), no right to vote or receive dividends or any other rights of a stockholder will exist with respect to shares of Stock to be issued in connection with an Award, notwithstanding the exercise of a Stock Option or any other action by the grantee with respect to an Award.

(d) Other Compensation Arrangements; No Employment Rights. Nothing contained in this Plan shall prevent the Board from adopting other or additional compensation arrangements, including trusts, and such arrangements may be either generally applicable or applicable only in specific cases. The adoption of this Plan and the grant of Awards do not confer upon any employee any right to continued employment with the Company or any Subsidiary.

(e) Trading Policy Restrictions. Option exercises and other Awards under the Plan shall be subject to the Company's insider trading policies and procedures, as in effect from time to time.

(f) Forfeiture of Awards under Sarbanes-Oxley Act. If the Company is required to prepare an accounting restatement due to the material noncompliance of the Company, as a result of misconduct, with any financial reporting requirement under the securities laws, then any grantee who is one of the individuals subject to automatic forfeiture under Section 304 of the Sarbanes-Oxley Act of 2002 shall reimburse the Company for the amount of any Award received by such individual under the Plan during the 12-month period following the first public issuance

or filing with the United States Securities and Exchange Commission, as the case may be, of the financial document embodying such financial reporting requirement.

SECTION 14. EFFECTIVE DATE OF PLAN

This Plan shall become effective upon approval by the Board.

SECTION 15. GOVERNING LAW

This Plan and all Awards and actions taken thereunder shall be governed by, and construed in accordance with, the laws of the State of Delaware, applied without regard to conflict of law principles.

DATE APPROVED BY BOARD OF DIRECTORS: May 10, 2016

Amended on January 14, 2019

Amended on February 21, 2020

Amended and Restated on December 17, 2020

Amended on February 12, 2021

**STOCK OPTION AGREEMENT**
**UNDER FATE THERAPEUTICS, INC.**
**INDUCEMENT EQUITY PLAN**

Name of Optionee:

No. of Option Shares:

Option Exercise Price per Share:

Grant Date:

Expiration Date:

Vesting Commencement Date:

Vesting Schedule:

Pursuant to the Fate Therapeutics, Inc. Inducement Equity Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock") of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended. For the avoidance of doubt, this Stock Option is not issued under the Company's 2013 Stock Option and Incentive Plan, and does not reduce the share reserve under such equity plan. This Stock Option is granted as an "employment inducement award" pursuant to the exemption provided by Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc.

1. Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

2. Manner of Exercise.

(a) The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

(b) The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

(c) Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

3. Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

(a) Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

(b) Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

(c) Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

(d) Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

4. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

5. Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

6. Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

7. No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

8. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

9. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

10. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____

Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Optionee's Signature

Optionee's name and address:

_____

_____

_____

**STOCK OPTION AGREEMENT**
**UNDER FATE THERAPEUTICS, INC.**
**INDUCEMENT EQUITY PLAN**

Name of Optionee:

No. of Option Shares:

Option Exercise Price per Share:

Grant Date:

Expiration Date:

Vesting Commencement Date:

Vesting Schedule:

Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, this Stock Option shall be treated in accordance with Section 3(c) of the Plan (as defined below); provided, that, in the event the employment of the Optionee is terminated by the Company (as defined below) without Cause (as defined in the Company's Severance and Change in Control Policy (as amended or superseded from time to time, the "Severance and CIC Policy")) or the Optionee resigns for Good Reason (as defined in the Severance and CIC Policy) at any time following the first anniversary of the Optionee's first day of employment with the Company, then subject to the Optionee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company, the Stock Option (as defined below) shall vest immediately with respect to a number of underlying shares that would have vested had the Optionee remained employed with the Company or a Subsidiary for an additional nine (9) months following the date of termination; provided further, that, in the event the Optionee's employment is terminated by the Company (or its successor) without Cause or the Optionee resigns for Good Reason, in either case within the period commencing three months prior to and ending one year after closing of a Sale Event (as defined in the Plan), then subject to the Optionee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company or its successor or acquirer, the Optionee shall be entitled to full acceleration of vesting of the shares underlying the Stock Option.

Pursuant to the Fate Therapeutics, Inc. Inducement Equity Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value $0.001 per share (the "Stock") of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended. For the avoidance of doubt, this Stock Option is not issued under the Company's 2013 Stock Option and Incentive Plan, and does not reduce the share reserve under

such equity plan. This Stock Option is granted as an "employment inducement award" pursuant to the exemption provided by Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc.

1. Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 2 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall become exercisable in accordance with the Vesting Schedule set forth above, so long as the Optionee remains an employee of the Company or a Subsidiary on such vesting dates. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

2. Manner of Exercise.

(a) The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number

of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the Shares attested to.

(b) The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

(c) Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

3. Termination of Employment. If the Optionee's employment by the Company or a Subsidiary (as defined in the Plan) is terminated, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

(a) Termination Due to Death. If the Optionee's employment terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

(b) Termination Due to Disability. If the Optionee's employment terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such disability, may thereafter be exercised by the Optionee for a period of 12 months from the date of disability or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of disability shall terminate immediately and be of no further force or effect.

(c) Termination for Cause. If the Optionee's employment terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company.

(d) Other Termination. If the Optionee's employment terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's employment shall be conclusive and binding on the Optionee and his or her representatives or legatees.

4. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

5. Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

6. Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the minimum required tax withholding obligation to be satisfied, in whole or in part, by withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the minimum withholding amount due.

7. No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Optionee at any time.

8. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

9. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or

desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

10. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Optionee's Signature

Optionee's name and address:

_____

_____

_____

**Exhibit 10.10**

**RESTRICTED STOCK UNIT AWARD AGREEMENT**
**UNDER FATE THERAPEUTICS, INC.**
**INDUCEMENT EQUITY PLAN**

Name of Grantee: _____

No. of Restricted Stock Units: _____

Grant Date: _____

Vesting Commencement Date: _____

Pursuant to the Fate Therapeutics, Inc. Inducement Equity Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.001 per share (the "Stock") of the Company. For the avoidance of doubt, the Award is not issued under the Company's 2013 Stock Option and Incentive Plan, and does not reduce the share reserve under such equity plan. This Award is granted as an "employment inducement award" pursuant to the exemption provided by Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc.

1. Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

2. Vesting of Restricted Stock Units. The restrictions and conditions of Paragraph 1 of this Agreement shall lapse as follows:

so long as the Grantee continues to serve as an employee of the Company or a Subsidiary on such dates. Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, the Restricted Stock Units shall be treated in accordance with Section 3(c) of the Plan. The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

3. Termination of Employment. If the Grantee's employment with the Company and its Subsidiaries terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

4. Issuance of Shares of Stock. Subject to the satisfaction of all applicable withholding tax obligations in accordance with Paragraph 6 below, as soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of

the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

5. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

6. Tax Withholding. In connection with the settlement of vested Restricted Stock Units, the Company shall issue the shares of Stock referred to in Paragraph 4 to a broker designated by the Company and acting on behalf and for the account of the Grantee with instructions to (i) sell a number of shares of such Stock sufficient to satisfy the applicable withholding taxes which arise in connection with such settlement, along with any applicable third-party commission, and (ii) remit the proceeds of such sale to the Company. In the event the sale proceeds are insufficient to fully satisfy the applicable withholding taxes, the Grantee authorizes withholding from payroll and any other amounts payable to the Grantee, in the same calendar year, and otherwise agrees to make adequate provision through the submission of cash, a check or its equivalent for any sums required to satisfy the applicable withholding taxes. It is the intent of the parties that this Paragraph 6 comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Agreement will be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act. Unless the withholding tax obligations of the Company and/or any Affiliate thereof are satisfied, the Company shall have no obligation to issue any shares of Stock on the Grantee's behalf pursuant to the vesting of the Restricted Stock Units.

7. Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as "short-term deferrals" as described in Section 409A of the Code.

8. No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Grantee at any time.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

10. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process,

register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

11. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Grantee's Signature

Grantee's name and address:

_____

_____

_____

**RESTRICTED STOCK UNIT AWARD AGREEMENT**
**UNDER FATE THERAPEUTICS, INC.**
**INDUCEMENT EQUITY PLAN**

Name of Grantee: _____

No. of Restricted Stock Units: _____

Grant Date: _____

Vesting Commencement Date: _____

Pursuant to the Fate Therapeutics, Inc. Inducement Equity Plan as amended through the date hereof (the "Plan"), Fate Therapeutics, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value $0.001 per share (the "Stock") of the Company. For the avoidance of doubt, the Award is not issued under the Company's 2013 Stock Option and Incentive Plan, and does not reduce the share reserve under such equity plan. This Award is granted as an "employment inducement award" pursuant to the exemption provided by Rule 5635(c)(4) of the Marketplace Rules of the NASDAQ Stock Market, Inc.

12. Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

13. Vesting of Restricted Stock Units; Acceleration.

(a) The restrictions and conditions of Paragraph 1 of this Agreement shall lapse as follows:

so long as the Grantee continues to serve as an employee of the Company or a Subsidiary on such dates.

(b) Notwithstanding anything in the Agreement to the contrary, in the case of a Sale Event, the Restricted Stock Units shall be treated in accordance with Section 3(c) of the Plan; provided, that, in the event the employment of the Grantee is terminated by the Company without Cause (as defined in the Company's Severance and Change in Control Policy (as amended or superseded from time to time, the "Severance and CIC Policy")) or the Grantee resigns for Good Reason (as defined in the Severance and CIC Policy) at any time following the first anniversary of the Grantee's first day of employment with the Company, then subject to the Grantee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company, this Award shall vest immediately with respect to a number of Restricted Stock Units that would have vested had the Grantee remained employed with the Company for an additional nine (9)

months following the date of termination; provided further, that, in the event the Grantee's employment is terminated by the Company (or its successor) without Cause or the Grantee resigns for Good Reason, in either case within the period commencing three months prior to and ending one year after closing of a Sale Event (as defined in the Plan), then subject to the Grantee's execution and non-revocation of a severance agreement within 60 days following the date of such termination, including a general release of claims acceptable to the Company or its successor or acquirer, the Grantee shall be entitled to full acceleration of vesting of all remaining unvested Restricted Stock Units underlying this Award.

(c) The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

14. Termination of Employment. Subject to Section 2(b), if the Grantee's employment with the Company and its Subsidiaries terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

15. Issuance of Shares of Stock. Subject to the satisfaction of all applicable withholding tax obligations in accordance with Paragraph 6 below, as soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

16. Incorporation of Plan. Notwithstanding anything herein to the contrary but subject to Section 2(b) herein, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

17. Tax Withholding. In connection with the settlement of vested Restricted Stock Units, the Company shall issue the shares of Stock referred to in Paragraph 4 to a broker designated by the Company and acting on behalf and for the account of the Grantee with instructions to (i) sell a number of shares of such Stock sufficient to satisfy the applicable withholding taxes which arise in connection with such settlement, along with any applicable third-party commission, and (ii) remit the proceeds of such sale to the Company. In the event the sale proceeds are insufficient to fully satisfy the applicable withholding taxes, the Grantee authorizes withholding from payroll and any other amounts payable to the Grantee, in the same calendar year, and otherwise agrees to make adequate provision through the submission of cash, a check or its equivalent for any sums required to satisfy the applicable withholding taxes. It is the intent of the parties that this Paragraph 6 comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Agreement will be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act. Unless the withholding tax obligations of the Company and/or any Affiliate

thereof are satisfied, the Company shall have no obligation to issue any shares of Stock on the Grantee's behalf pursuant to the vesting of the Restricted Stock Units.

18. Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as "short-term deferrals" as described in Section 409A of the Code.

19. No Obligation to Continue Employment. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in employment and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the employment of the Grantee at any time.

20. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

21. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

22. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file

with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

**FATE THERAPEUTICS, INC.**

By: _____
Title: President & CEO

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

_____
Grantee's Signature

Grantee's name and address:

_____

_____

_____

**Exhibit 10.19**

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED (INDICATED BY: [***]) FROM THE EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY EXPOSED.

**WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH**

**and**

**FATE THERAPEUTICS, INC.**

# EXCLUSIVE PATENT LICENSE AGREEMENT

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**WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH**
**EXCLUSIVE PATENT LICENSE AGREEMENT**

This Agreement, effective as of February 24, 2009 (the "**EFFECTIVE DATE**"), is between the **Whitehead Institute for Biomedical Research** ("**WHITEHEAD**"), a Delaware corporation, with a principal office at Nine Cambridge Center, Cambridge, MA 02142, and **Fate Therapeutics, Inc.** ("**FATE**"), a Delaware corporation, with a principal place of business at 10931 N. Torrey Pines Road, Suite 107, La Jolla, California 92037.

## RECITALS

WHEREAS, WHITEHEAD is the owner of certain PATENT RIGHTS and TANGIBLE PROPERTY (as later defined herein) relating to WHITEHEAD **Case No. [***]**; [*******]; [*******]; WHITEHEAD **Case No. [*****], and WHITEHEAD has the right to grant licenses under said PATENT RIGHTS and TANGIBLE PROPERTY;

WHEREAS, Rudolf Jaenisch, an inventor of the PATENT RIGHTS, has or will shortly acquire equity in the FATE not resulting from this Agreement, and as per WHITEHEAD policy, will not receive any share of equity income received by WHITEHEAD in consideration for this license;

WHEREAS, equity received pursuant to this Agreement will satisfy WHITEHEAD'S policy on equity sharing as stated in Appendix 6.4 of the Faculty Guide "Policy on Equity Received by Faculty or Professional Staff Being Shared with the Institute";

WHEREAS, WHITEHEAD desires to have the PATENT RIGHTS and TANGIBLE PROPERTY developed and commercialized to benefit the public, and WHITEHEAD is willing to grant a license thereunder;

WHEREAS, FATE has represented to WHITEHEAD, to induce WHITEHEAD to enter into this Agreement, that FATE will commit itself to a thorough, vigorous and diligent program of exploiting the PATENT RIGHTS and TANGIBLE PROPERTY so that public utilization will result therefrom; and

WHEREAS, FATE desires to obtain a license under the PATENT RIGHTS and TANGIBLE PROPERTY upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, WHITEHEAD and FATE hereby agree as follows:

## 1. DEFINITIONS

1.1 "**AFFILIATE**" will mean any legal entity (such as a corporation, partnership, or limited liability company) that directly or indirectly controls, is controlled by, or is under common control with FATE. For the purposes of this definition, the term "control" means (i) beneficial ownership of at least fifty percent (50%) of the voting securities of a corporation or other business organization with voting securities or (ii) a fifty percent (50%) or greater interest

in the net assets or profits of a partnership or other business organization without voting securities.

1.2 "**COMBINATION PRODUCT**" will mean a product which contains (i) a component that is a LICENSED PRODUCT and (ii) one or more other essential functional components which could be sold separately and which perform(s) a useful function independent of the LICENSED PRODUCT component.

1.3 "**CORPORATE PARTNER**" will mean any entity which agrees to compensate FATE or an AFFILIATE or SUBLICENSEE for FATE's, AFFILIATE'S or SUBLICENSEE'S practice of the PATENT RIGHTS and/or LICENSED PRODUCTS on behalf of or in collaboration with such entity, including without limitation for discovery and development activities for LICENSED PRODUCTS. Any entity which meets the foregoing criteria and receives a sublicense of the PATENT RIGHTS and/or TANGIBLE PROPERTY will be considered a SUBLICENSEE.

1.4 "**FIELD**" will mean all fields (including, for the avoidance of doubt, the REAGENT DISCOVERY FIELD, as defined below) except the REAGENT FIELD, as defined herein.

1.5 "**IND**" will mean, with respect to a particular LICENSED PRODUCT, an Investigational New Drug application submitted to the FDA, or a corresponding application filed with any other regulatory agency, seeking approval to begin tests of a new drug in human subjects.

1.6 "**LICENSED PRODUCT**" will mean a device, composition, method, process or service, the manufacture, use, sale, offer for sale or import of which, but for the licenses granted herein, (i) would infringe a VALID CLAIM (including a device, composition, method, process or service) or (ii) utilizes or incorporates TANGIBLE PROPERTY.

1.7 "**NDA**" will mean a New Drug Application submitted to the FDA seeking approval to market and sell a PRODUCT in the United States of America, or a corresponding application filed with any other regulatory agency seeking approval to market and sell a LICENSED PRODUCT in a country in the TERRITORY.

1.8 "**NET SALES**"

(a) NET SALES will mean the gross amount billed by FATE, AFFILIATES and SUBLICENSEES for LICENSED PRODUCTS, less the following:

(i) customary trade, quantity, or cash discounts to the extent actually allowed and taken;

(ii) amounts repaid or credited by reason of rejection or return;

(iii) to the extent separately stated on purchase orders, invoices, or other documents of sale, any taxes or other governmental charges levied on the production, sale, transportation, delivery, or use of a LICENSED PRODUCT which is paid by or on behalf of FATE; and

(iv) reasonable charges for delivery or transportation provided by third parties, if separately stated.

No deductions will be made for commissions paid to individuals whether they are with independent sales agencies or regularly employed by FATE and on its payroll, or for cost of collections. NET SALES will occur on the date of billing for a LICENSED PRODUCT. If a LICENSED PRODUCT is distributed at a discounted price that is substantially lower than the customary price charged by FATE, or distributed for non-monetary consideration (whether or not at a discount), NET SALES will be calculated based on the non-discounted amount of the LICENSED PRODUCT charged to an independent third party during the same REPORTING PERIOD or, in the absence of such sales, on the fair-market value of the LICENSED PRODUCT. For clarity, the transfer and/or sale of LICENSED PRODUCTS between FATE and an AFFILIATE, or between FATE or an AFFILIATE and a SUBLICENSEE, in each case for the purpose of a subsequent timely sale of such LICENSED PRODUCT to an end-user purchaser, will not be considered a sale for purposes of NET SALES calculations; provided that, such subsequent timely sale of such LICENSED PRODUCT to an end-user purchaser sale shall be considered a sale for NET SALES calculations upon the billing of the end-user purchaser. NET SALES shall be determined at the gross amount billed to the end-user purchaser less the deductions set forth in this Section 1.8(a)(1) through (iv), above.

Non-monetary consideration will not be accepted by FATE, any AFFILIATE, or any SUBLICENSEE for any LICENSED PRODUCT without the prior written consent of WHITEHEAD.

(b) NET SALES of COMBINATION PRODUCT. In the event that a LICENSED PRODUCT is sold as a COMBINATION PRODUCT, for the purposes of determining royalty payments on the COMBINATION PRODUCT, NET SALES will mean the gross amount billed for the COMBINATION PRODUCT less the deductions set forth in Section 1.8(a), multiplied by a proration factor that is determined as follows:

(i) If all components of the COMBINATION PRODUCT were sold separately during the same or immediately preceding REPORTING PERIOD, the proration factor will be determined by the formula [*A I* (*A*+*B*)], where *A* is the average gross sales price of all LICENSED PRODUCT components during such period when sold separately from the other component(s), and *B* is the average gross sales price of the other component(s) during such period when sold separately from the LICENSED PRODUCT components; or

(ii) If all components of the COMBINATION PRODUCT were not sold or provided separately during the same or immediately preceding REPORTING

PERIOD, the proration factor will be determined by WHITEHEAD and FATE in good-faith negotiations based on the relative value contributed by each component.

1.9 "**PATENT CHALLENGE**" will mean:

(i) a challenge under any court action or proceeding to the validity, patentability, enforceability and/or non-infringement of any of the PATENT RIGHTS (as defined below);

(ii) a reexamination of any of the PATENT RIGHTS initiated by FATE, AFFILIATE, or SUBLICENSEE without thirty (30)-day prior written notice to WHITEHEAD; or

(iii) a reexamination of any of the PATENT RIGHTS initiated by FATE, AFFILIATE, or SUBLICENSEE, in which WHITEHEAD reasonably concludes in good faith that such reexamination is not beneficial to the PATENT RIGHTS.

1.10 "**PATENT RIGHTS**" will mean:

(i) the United States and international patents listed on Appendix A;

(ii) the United States and international patent applications and/or provisional applications listed on Appendix A and the resulting patents;

(iii) any patent applications resulting from the provisional applications listed on Appendix A, and any divisional, continuations, continuation-in-part applications, and continued prosecution applications (and their relevant international equivalents) of the patent applications listed on Appendix A and of such patent applications that result from the provisional applications listed on Appendix A, to the extent the claims are directed to subject matter specifically described in the patent applications listed on Appendix A, and the resulting patents;

(iv) any patents resulting from reissues, reexaminations, or extensions (and their relevant international equivalents) of the patents described in (i), (ii), and (iii) above; and

(v) international (non-United States) patent applications and provisional applications filed after the EFFECTIVE DATE and the relevant international equivalents to divisionals, continuations, continuation-in-part applications and continued prosecution applications of the patent applications to the extent the claims are directed to subject matter specifically described in the patents or patent applications referred to in (i), (ii), (iii), and (iv) above, and the resulting patents.

1.11 "**PHASE I CLINICAL TRIAL**" will mean a controlled clinical study of the first introduction of the LICENSED PRODUCT into human subjects.

1.12 "**PHASE II CLINICAL TRIAL**" will mean a controlled clinical study conducted to obtain preliminary data on the effectiveness of the LICENSED PRODUCT for a particular indication or indications in human subjects with the disease or condition and the possible short-term side effects and risks associated with the LICENSED PRODUCT.

1.13 "**PHASE III CLINICAL TRIAL**" will mean a clinical trial of a LICENSED PRODUCT in human subjects for the purpose of gathering the definitive information about efficacy, dosage and safety in the proposed therapeutic indication that is needed for the FDA or other appropriate regulatory agency to evaluate the overall benefit-risk relationship of the drug prior to granting (or denying) approval to market the drug.

1.14 "**REAGENT FIELD**" will mean the sale and/or distribution of reagents for basic research use, including without limitation basic research having as its primary purpose understanding the biology or pathology of cells or cell lines and diseases or disorders affecting them. For avoidance of doubt, the REAGENT FIELD permits the research and development of reagent products; provided that, the REAGENT FIELD shall specifically exclude the use, sale and/or distribution of reagents for the following activities (the "**REAGENT DISCOVERY FIELD**"):

(i) any human clinical vise or veterinary use including without limitation therapeutic, prophylactic or diagnostic use;

(ii) the development, manufacture or provision of any healthcare or consumer products, processes or services;

(iii) discovery, development, or manufacturing of pharmaceutical products (including without limitation assay development or cell line generation for drug discovery or drug development, screening of chemical and/or biological compounds for the identification of pharmaceutically active agents, preclinical testing, or services related to the above); and

(iv) conducting services for the purpose of discovering or developing pharmaceutical products.

1.15 "**REPORTING PERIOD**" will begin on the first day of each calendar quarter and end on the last day of such calendar quarter.

1.16 "**SUBLICENSE INCOME**"

(a) "SUBLICENSE INCOME" will mean the following:

(i) any payments that FATE receives from a SUBLICENSEE in consideration of the sublicense of the rights granted FATE under Section 2.1, including without limitation license fees, milestone payments, license maintenance fees, and other payments, but specifically excluding royalties on NET SALES;

(ii) any payments that FATE or an AFFILIATE or SUBLICENSEE receives from a CORPORATE PARTNER in consideration of any of the rights described in Section 1.3, including without limitation fees, milestone payments, agreement maintenance fees, and other payments.

(b) "SUBLICENSE INCOME" specifically excludes the following:

(i) royalties on NET SALES as provided in 1.16(a)(i) above;

(ii) payments made by SUBLICENSEE or CORPORATE PARTNER as consideration for the issuance of equity or debt securities of FATE at fair-market value; provided that, if a SUBLICENSEE or CORPORATE PARTNER pays more than fair-market value for equity or debt securities, the portion in excess of fair-market value will be considered SUBLICENSE INCOME;

(iii) payments to FATE or an AFFILIATE from a SUBLICENSEE or CORPORATE PARTNER for the purposes of funding the costs of bona fide research and development of LICENSED PRODUCTS and that are expressly intended only to fund or pay for (I) the purchase or use of equipment, supplies, products or services, or (2) the use of employees and/or consultants to achieve a research or development goal for the commercialization of LICENSED PRODUCTS, as indicated by their inclusion as specific line items in a written agreement between FATE (or AFFILIATE) and the SUBLICENSEE, or between FATE (or AFFILIATE) and CORPORATE PARTNER.

1.17 "**SUBLICENSEE**" will mean any non-AFFILIATE sublicensee of the rights granted to FATE under Section 2.1.

1.18 "**TANGIBLE PROPERTY**" will mean the materials supplied by WHITEHEAD from the laboratory of Rudolf Jaenisch, whether by themselves or incorporated into another material, and any progeny and unmodified derivatives thereof. A complete list of TANGIBLE PROPERTY is provided in Appendix D and Appendix E, and such list may be updated upon the mutual written consent between the parties during the TERM.

1.19 "**TERM**" will mean the term of this Agreement, which will commence on the EFFECTIVE DATE and remain in effect until the expiration or abandonment of all issued patents and filed patent applications within the PATENT RIGHTS, unless earlier terminated in accordance with the provisions of this Agreement.

1.20 "**TERRITORY**" will mean worldwide.

1.21 "**VALID CLAIM**" will mean a claim of the following:

(i) an issued patent under the PATENT RIGHTS which has not been revoked or held unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction, unappealable or unappealed within the time allowed for

appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise; or

(ii) a pending patent application under the PATENT RIGHTS which has not been pending for a period of more than [***] from the date such application was first examined and has been prosecuted in good faith and has not been abandoned or finally disallowed without the possibility of appeal or re-filing of such application.

## 2. GRANT OF RIGHTS

2.1 License Grants.

(a) PATENT RIGHTS. Subject to the terms of this Agreement, WHITEHEAD hereby grants to FATE and its AFFILIATES for the TERM a royalty-bearing license under the PATENT RIGHTS, including, without limitation, to develop, make, have made, use, have used, sell, have sold, offer to sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY.

(b) TANGIBLE PROPERTY. Subject to WHITEHEAD'S provision of the TANGIBLE PROPERTY to FATE, WHITEHEAD hereby grants to FATE and its AFFILIATES for the TERM a royalty-bearing license to use the TANGIBLE PROPERTY, including, without limitation, to make, have made, use, have used, sell, have sold, offer for sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY. Legal title to the TANGIBLE PROPERTY will remain with WHITEHEAD.

2.2 Exclusivity.

(a) PATENT RIGHTS. Subject to the terms of this Agreement, in order to establish an exclusive period for FATE, WHITEHEAD agrees that it will not grant any other license under the PATENT RIGHTS to make, have made, use, have used, sell, have sold, offer to sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY during the TERM, and WHITEHEAD shall not have any right to practice the PATENT RIGHTS in the FIELD other than in accordance with Section 2.5.

(b) TANGIBLE PROPERTY. Subject to the terms of this Agreement, in order to establish an exclusive period for FATE, WHITEHEAD agrees that it will not provide TANGIBLE PROPERTY to for-profit entities in the FIELD in the TERRITORY during the TERM. WHITEHEAD will refer any TANGIBLE PROPERTY request from a for-profit entity in the FIELD to FATE. Furthermore, subject to the terms of this Agreement, WHITEHEAD agrees that it will not grant any other licenses to use the TANGIBLE PROPERTY, including, without limitation, to make, have made, use, have used, sell, have sold, offer for sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY. This Section 2.2(b) does not apply to the TANGIBLE PROPERTY listed in Appendix E.

2.3 Sublicenses.

(a) FATE will have the right to grant sublicenses of its rights under Section 2.1. FATE shall incorporate terms and conditions into its sublicense agreements sufficient to enable SUBLICENSEE to comply with this Agreement. FATE shall furnish WHITEHEAD with a fully signed photocopy of any sublicense agreement within thirty (30) days of its effective date.

(b) Upon termination of this Agreement for any reason, any SUBLICENSEE not then in default will be granted a license from WHITEHEAD under rights and terms equivalent to the sublicense rights and terms which FATE previously granted to such SUBLICENSEE.

2.4 U.S. Manufacturing. FATE agrees that any LICENSED PRODUCT used or sold in the United States will be manufactured substantially in the United States.

2.5 Retained Rights.

(a) WHITEHEAD.

(i) The granting and exercise of the license set forth in this Agreement is subject to WHITEHEAD'S "Policy Statement Regarding Patents, Copyrights and Other Intellectual Property" as may be amended from time to time in a manner that does not limit or restrict FATE's rights hereunder, and WHITEHEAD'S obligations under existing agreements with other sponsors of research or WHITEHEAD'S obligations to the U.S. Government or non-profit foundations.

(ii) WHITEHEAD retains the right to practice under the PATENT RIGHTS and use TANGIBLE PROPERTY for research, teaching, and educational purposes.

(iii) WHITEHEAD reserves the right to practice the PATENT RIGHTS and use the TANGIBLE PROPERTY in corporate-sponsored research with a third party including, but not limited to, [*******] (the "**MODEL FIELD**"); provided that, corporate-sponsored research outside of the MODEL FIELD will be permitted under the following: (1) WHITEHEAD will provide written notification to FATE prior to the commencement of such corporate-sponsored research and (2) FATE does not provide written objection to the corporate-sponsored research reasonably demonstrating to WHITEHEAD that such corporate-sponsored research is competitive to the development of a LICENSED PRODUCT within ten (10) business days of its receipt of such written notification by WHITEHEAD.

WHITEHEAD will notify FATE if and when WHITEHEAD seeks to license any inventions resulting from any exercise of rights under this Section 2.5(a) in accord with Section 2.7.

(b) Academic and Not-For-Profit Research Institutes.

(i) WHITEHEAD retains the right to grant licenses to academic and not-for-profit research institutes to practice under the PATENT RIGHTS for research, teaching, and educational purposes; provided that such purposes shall exclude corporate-sponsored research.

(ii) WHITEHEAD retains the right to provide TANGIBLE PROPERTY to academic and not-for-profit research institutes for research, teaching, and educational purposes under a Material Transfer Agreement on terms consistent with the terms of this Agreement; provided that such purposes shall exclude (1) use in corporate-sponsored research; (2) any human or veterinary use (including without limitation therapeutic, prophylactic or diagnostic use) but permitting their use in laboratory animals; (3) development, manufacture or provision of any services or products; (4) discovery, development or manufacturing of pharmaceutical products (including screening compound libraries); and (5) conducting services for the purpose of discovering or developing pharmaceutical products. WHITEHEAD will notify FATE when it enters into such Material Transfer Agreement.

(c) Federal Government. FATE acknowledges that the United States Government retains a royalty-free, non-exclusive, non-transferable license to practice any government-funded invention claimed in any PATENT RIGHTS as set forth in 35 U.S.C. §§ 201-211, and the regulations promulgated thereunder, as amended, or any successor statutes or regulations.

All rights reserved to the United States Government and others under Public Law 96-517, and Public Law 98-620, will remain and will in no way be affected by this Agreement

2.6 No Additional Rights. Nothing in this Agreement shall be construed to confer any rights upon FATE by implication, estoppel, or otherwise as to any technology or patent rights of WHITEHEAD or any other entity other than the PATENT RIGHTS, regardless of whether such technology or patent rights shall be dominant or subordinate to any PATENT RIGHTS.

2.7 Marketing of Future Improvements. WHITEHEAD will notify FATE concurrently with marketing to third parties if and when WHITEHEAD seeks to license any inventions developed or conceived within [***] of the EFFECTIVE DATE from the WHITEHEAD laboratory of Rudolf Jaenisch (including any such invention dominated by any of the PATENT RIGHTS), or any related patent rights or tangible properly, and FATE will be on equal footing with other parties to negotiate a license thereto subject to any funding obligations.

**3. COMPANY DILIGENCE OBLIGATIONS**

3.1 FATE shall use commercially reasonable efforts, or shall cause its AFFILIATES and SUBLICENSEES to use commercially reasonable efforts, to develop LICENSED PRODUCTS and to introduce LICENSED PRODUCTS into the commercial market; thereafter,

FATE or its AFFILIATES or SUBLICENSEES shall make LICENSED PRODUCTS or LICENSED PROCESSES reasonably available to the public. Specifically, FATE or AFFILIATE or SUBLICENSEE shall fulfill the following obligations:

(i) Within [***] after the EFFECTIVE DATE, FATE shall furnish WHITEHEAD with a written research and development plan describing the major tasks to be achieved in order to bring to market a LICENSED PRODUCT, specifying the number of staff and other resources to be devoted to such commercialization effort.

(ii) Within [***] after the end of each calendar year, FATE shall furnish WHITEHEAD with a written report (consistent with Section 5.1(a)) on the progress of its efforts during the immediately preceding calendar year to develop and commercialize LICENSED PRODUCTS. The report will also contain a discussion of intended efforts and sales projections for the year in which the report is submitted.

3.2 Diligence Requirements. If, in a calendar year, FATE, its AFFILIATES or a SUBLICENSEE, alone or together, has performed any one of the following with respect to a LICENSED PRODUCT, then FATE will be deemed to have complied with FATE's obligations under this Section 3.2 with respect to a LICENSED PRODUCT:

(i) has expended a minimum of [***] for the development of a LICENSED PRODUCT, which will include sponsored-research funding and AFFILIATES' and SUBLICENSEES' expenditures;

(ii) is actively [***];

(iii) is actively [***];

(iv) is actively [***];

(v) [***];

(vi) [***];

(vii) [***];

(viii) [***];

(ix) a LICENSED PRODUCT is [***].

In the event that FATE, its AFFILIATES or SUBLICENSEES have not performed at least one of Sections 3.2(i) through (ix) during a calendar year with respect to a LICENSED PRODUCT, then WHITEHEAD may treat such failure as a material breach in accordance with Section 13.3(b), but subject to a [***] and not a [***] cure period.

**4. ROYALTIES AND PAYMENT TERMS**

4.1 Consideration for Grant of Rights.

(a) Patent Cost Reimbursement. FATE shall pay to WHITEHEAD on the EFFECTIVE DATE such amounts required as reimbursement in accordance with Section 6.3, relating to actual expenses incurred as of the EFFECTIVE DATE in connection with obtaining the PATENT RIGHTS. These payments are nonrefundable.

(b) License Maintenance Fees. FATE shall pay to WHITEHEAD the following nonrefundable license maintenance fees on January 1 of each year set forth below:

| Year | Maintenance Fee |
|---|---|
| 2010 | **[***]** |
| 2011 | **[***]** |
| 2012 | **[***]** |
| 2013 | **[***]** |
| 2014 and every year thereafter | **[***]** |

This License Maintenance Fee may be credited to payments made in the same calendar year, if any, for Milestone Payments, Running Royalties, and SUBLICENSE INCOME. Payments in excess of the License Maintenance Fee in a given calendar year will not be creditable to License Maintenance Fees due in another calendar year. The License Maintenance Fee may not be credited to the payment for Patent Issuance.

(c) Milestone Payments. FATE shall pay to WHITEHEAD the following nonrefundable Milestone Payments upon first achievement of the following events whether by FATE, its AFFILIATE, or SUBLICENSEE:

(i) [***] upon the [***].

(ii) [***].

(iii) [***] upon the [***].

(iv) [***] upon the [***].

(v) [***] upon the [***].

For the purpose of this Section 4.1(c), ***].

(d) Patent Issuance: FATE shall pay to WHITEHEAD [***] upon the issuance of a patent under the PATENT RIGHTS. This Patent Issuance payment may be paid in whole or in part by common stock of the FATE (based on such common stock's then fair-market value), at FATE's sole option. In no event will this payment be due earlier than three (3) years

after the EFFECTIVE DATE; provided however that if there is an issuance of a patent under the PATENT RIGHTS prior to such date, then this Patent Issuance payment will be due at the three-year anniversary of the EFFECTIVE DATE. This Patent Issuance payment is: (1) payable once only under the Agreement (irrespective of the total number of patents issued under the PATENT RIGHTS under the Agreement); (2) nonrefundable; and (3) not creditable against any payments due under this Agreement.

(e) Running Royalties. Running Royalties will be payable for each REPORTING PERIOD and will be due to WHITEHEAD within sixty (60) days of the end of each REPORTING PERIOD.

(i) LICENSED PRODUCTS covered by a VALID CLAIM. FATE shall pay to WHITEHEAD a running royalty of [***] of NET SALES of LICENSED PRODUCTS in which the [***], by FATE, AFFILIATES and SUBLICENSEES.

(ii) LICENSED PRODUCTS not covered by a VALID CLAIM. FATE shall pay to WHITEHEAD a running royalty of [***] of NET SALES of LICENSED PRODUCTS in which [***], by FATE, AFFILIATES and SUBLICENSEES.

(f) Share of SUBLICENSE INCOME. FATE shall pay to WHITEHEAD a percentage of all SUBLICENSE INCOME received by FATE or AFFILIATES according to the following schedule:

| SUBLICENSE INCOME received by FATE (on a cumulative basis) | Share of SUBLICENSE INCOME payable to WHITEHEAD |
|---|---|
| Up to [***] | [***] |
| [***] | [***] |
| More than [***] | [***] |

A share of the SUBLICENSE INCOME will be payable for each REPORTING PERIOD and will be due to WHITEHEAD within [***] of the end of each REPORTING PERIOD. The total aggregate amount payable by FATE to WHITEHEAD under this Section 4.1(f) will not exceed [***].

To the extent that rights or obligations other than the PATENT RIGHTS or TANGIBLE PROPERTY are sublicensed by FATE, any income received will be equitably apportioned between those PATENT RIGHTS and/or TANGIBLE PROPERTY and those other rights and obligations for purposes of calculating the amounts owed WHITEHEAD pursuant to the above schedule. The parties shall determine the apportionment in good-faith negotiations, and FATE shall provide reasonable documentation to WHITEHEAD in support of such apportionment.

(g) No Multiple Royalties. If the manufacture, use, lease, or sale of any LICENSED PRODUCT is covered by more than one of the PATENT RIGHTS, multiple royalties will not be due.

(h) Equity. FATE shall issue a total of [***] shares of Common Stock of FATE (the "**Shares**") in the name of WHITEHEAD and of such persons as WHITEHEAD will direct ("**Whitehead Holders**"), according to the Common Stock distribution in Appendix C and pursuant to a Stock Purchase Agreement to be provided, where the Whitehead Holders shall be specified by WHITEHEAD at the time of execution of the Stock Purchase Agreement. Such issuance will be recorded on the Stock Transfer Ledger of FATE on the EFFECTIVE DATE and the Shares will be delivered to WHITEHEAD and Whitehead Holders, if any, within thirty (30) days of the EFFECTIVE DATE.

FATE represents to WHITEHEAD that, as of the EFFECTIVE DATE, the aggregate number of Shares equals [***] of FATE's issued and outstanding Common Stock calculated on a "Fully Diluted Basis." For purposes of this Section 4.1(h), "Fully Diluted Basis" will mean that the total number of issued and outstanding shares of FATE's Common Stock will be calculated to include conversion of all issued and outstanding securities then convertible into Common Stock, the exercise of all then outstanding options and warrants to purchase shares of Common Stock, whether or not then exercisable, and will assume the issuance or grant of all securities reserved for issuance pursuant to any FATE stock or stock option plan in effect on the date of the calculation.

4.2 Payments.

(a) Method of Payment. All payments under this Agreement will be made payable to "Whitehead Institute for Biomedical Research" and sent to WHITEHEAD'S address identified in Section 16.1. Each payment will reference this Agreement and identify the obligation under this Agreement that the payment satisfies.

(b) Payments in U.S. Dollars. All payments due under this Agreement will be drawn on a United Slates bank and will be payable in United States Dollars. Conversion of foreign currency to U.S. Dollars will be made at the conversion rate existing in the United States (as reported in the *Wall Street Journal*) on the last working day of the calendar quarter of the applicable REPORTING PERIOD. Such payments will be without deduction of exchange, collection, or other charges, and, specifically, without deduction of withholding or similar taxes or other government imposed fees or taxes, except as permitted in the definition of NET SALES.

(c) Late Payments. Any payments by FATE that are not paid on or before the date such payments are due under this Agreement will bear interest, to the extent permitted by law, at [***] above the Prime Rate of interest as reported in the *Wall Street Journal* on the date payment is due or [***], whichever is greater.

## 5. REPORTS AND RECORD KEEPING

5.1 Frequency of Reports.

(a) Before First Commercial Sale. Prior to the first commercial sale of any LICENSED PRODUCT, FATE shall deliver reports to WHITEHEAD annually, within sixty

(60) days of the end of each calendar year, containing information concerning the immediately preceding calendar year, as further described in Section 5.2.

(b) Upon First Commercial Sale of a LICENSED PRODUCT. FATE shall report to WHITEHEAD the date of first commercial sale of a LICENSED PRODUCT within sixty (60) days of occurrence in each country.

(c) After First Commercial Sale. After the first commercial sale of a LICENSED PRODUCT, FATE shall deliver reports to WHITEHEAD within sixty (60) days of the end of each REPORTING PERIOD, containing information concerning the immediately preceding REPORTING PERIOD, as further described in Section 5.2.

5.2 Content of Reports and Payments. Each report delivered by FATE to WHITEHEAD will contain at least the following information for the immediately preceding REPORTING PERIOD:

(i) the number of LICENSED PRODUCTS sold, leased or distributed by FATE, AFFILIATES and SUBLICENSEES to independent third parties in each country specifying which PATENT RIGHTS and/or TANGIBLE PROPERTY are utilized for each LICENSED PRODUCT included in the report;

(ii) the number of LICENSED PRODUCTS used by FATE, AFFILIATES and SUBLICENSEES in the provision of services in each country specifying which PATENT RIGHTS and/or TANGIBLE PROPERTY are utilized for each LICENSED PRODUCT included in the report;

(iii) the gross price charged by FATE, AFFILIATES and SUBLICENSEES for each LICENSED PRODUCT and, if applicable, the gross price charged for each LICENSED PRODUCT used to provide services in each country;

(iv) calculation of NET SALES for the applicable REPORTING PERIOD in each country, including a detailed listing of deductions and credits taken;

(v) total royalty payable on NET SALES in U.S. dollars, together with the exchange rates used for conversion;

(vi) the amount of SUBLICENSE INCOME received by FATE from each SUBLICENSEE and the amount deliverable to WHITEHEAD from such SUBLICENSE INCOME, including an itemized breakdown of the sources of income comprising the SUBLICENSE INCOME; and

(vii) the number of sublicenses entered into for the PATENT RIGHTS, LICENSED PRODUCTS and/or TANGIBLE PROPERTY.

If no amounts arc due for any REPORTING PERIOD, the report will so state

5.3 Financial Statements. On or before the ninetieth (90th) day following the close of FATE's fiscal year, FATE shall provide WHITEHEAD with FATE's financial statements for the preceding fiscal year including, at a minimum, a balance sheet and an income statement, certified by FATE's treasurer or chief financial officer or by an independent auditor; provided that WHITEHEAD agrees that such financial statements may be unaudited and subject to additional revisions upon audit by an independent auditor (and FATE shall deliver audited financials to WHITEHEAD upon the completion of such audit by an independent auditor).

5.4 Record Keeping. FATE shall maintain, and shall cause its AFFILIATES and SUBLICENSEES to maintain, complete and accurate records together with supporting documentation relating to the rights and obligations under this Agreement and any amounts payable to WHITEHEAD in relation to this Agreement, which records shall contain sufficient information to permit WHITEHEAD to confirm the accuracy of any reports delivered to WHITEHEAD and compliance in other respects with this Agreement. The relevant party shall retain such records for at least three (3) years following the end of the calendar year to which they pertain, during which time WHITEHEAD or WHITEHEAD'S appointed agents, shall have the right, at WHITEHEAD'S expense, to inspect such records during normal business hours to verily any reports and payments made or compliance in other respects under this Agreement. In the event that any audit performed under this Section reveals an underpayment in excess of [*******] or more for any twelve (12)-month period, FATE shall bear the full cost of such audit and shall remit any amounts due to WHITEHEAD (including accrued interest pursuant to Section 4.2(c)) within thirty (30) days of receiving notice thereof from WHITEHEAD. WHITEHEAD may exercise its audit rights under this Section 5.4 no more frequently than once in any calendar year.

## 6. PATENT PROSECUTION

6.1 Responsibility for PATENT RIGHTS. WHITEHEAD shall prepare, file, prosecute, and maintain all of the PATENT RIGHTS. WHITEHEAD'S patent attorney(s) will directly copy FATE on all patent correspondence related to the PATENT RIGHTS. FATE will have reasonable advance opportunities to advise WHITEHEAD and shall cooperate with WHITEHEAD in such filing, prosecution and maintenance. WHITEHEAD will consult with FATE on the prosecution of the PATENT RIGHTS and the FATE's suggestions and requests regarding patent prosecution will be reasonably considered and included unless WHITEHEAD reasonably concludes in good faith that they are not beneficial to the PATENT RIGHTS. Continuation-in-part applications within the PATENT RIGHTS will be filed only upon the mutual agreement of the parties. WHITEHEAD shall keep FATE timely informed with regard to the patent application and maintenance processes. WHITEHEAD shall deliver to FATE copies of all patent applications, amendments, related correspondence, and other related matters in a timely manner.

6.2 International (non-United States) Filings. Appendix B is a list of countries in which patent applications corresponding to the United States patent applications listed in Appendix A shall be filed, prosecuted, and maintained. Appendix B may be amended by mutual agreement of FATE and WHITEHEAD. FATE may elect to surrender PATENT RIGHTS in any country upon at least [*******] prior written notice to WHITEHEAD. Such notice will not relieve FATE from its responsibility to reimburse WHITEHEAD for patent-related expenses

incurred prior to the expiration of the [***] notice period (or such longer period specified in FATE's notice). FATE shall surrender its commercial license to PATENT RIGHTS and TANGIBLE PROPERTY in countries where it surrenders PATENT RIGHTS.

6.3 Payment of Expenses. Subject to a one-time credit of Ten-Thousand Dollars ($10,000), payment of all fees and costs, including attorneys' fees, relating to the filing, prosecution and maintenance of the PATENT RIGHTS will be the responsibility of FATE, whether such amounts were incurred before or after the EFFECTIVE DATE. As of November 1, 2008, WHITEHEAD has incurred approximately Sixty-Seven-Thousand Dollars ($67,000) for such patent-related fees and costs. FATE shall reimburse all amounts due pursuant to this Section 6.3 within thirty (30) days of invoicing; late payments will accrue interest pursuant to Section 4.2(c). In the event that WHITEHEAD licenses PATENT RIGHTS in a field separate from the FIELD to a third-party, where possible, a reasonable adjustment to patent reimbursement payment will be made to account for such third-party license; provided however that FATE will be responsible for reimbursing ongoing patent expenses from the FIELD. In all instances, WHITEHEAD shall pay the fees prescribed for large entities to the United States Patent and Trademark Office.

## 7. INFRINGEMENT

7.1 Notification of Infringement. Each party agrees to provide written notice to the other party promptly after becoming aware of any infringement of the PATENT RIGHTS.

7.2 Right to Prosecute infringements.

(a) FATE Right to Prosecute. So long as FATE remains the exclusive licensee of the PATENT RIGHTS in the FIELD in the TERRITORY, FATE, to the extent permitted by law, will have the right, under its own control and at its own expense, to prosecute any third-party infringement of the PATENT RIGHTS in the FIELD in the TERRITORY, subject to Sections 7.4 and 7.5. If required by law, WHITEHEAD shall permit any action under this Section to be brought in its name, including being joined as a party-plaintiff, provided that FATE shall hold WHITEHEAD harmless from, and indemnify WHITEHEAD against, any costs, expenses, or liability that WHITEHEAD incurs in connection with such action. FATE shall reimburse WHITEHEAD for any costs WHITEHEAD incurs, including reasonable attorneys' fees, as part of any action brought by FATE, irrespective of whether WHITEHEAD becomes a party-plaintiff.

Prior to commencing any such action, FATE shall consult with WHITEHEAD and shall consider the views of WHITEHEAD regarding the advisability of the proposed action and its effect on the public interest. FATE shall not enter into any settlement, consent judgment, or other voluntary final disposition of any infringement action under this Section which imposes obligations on WHITEHEAD beyond those set forth herein, or which invalidates or restricts the PATENT RIGHTS, without the prior written consent of WHITEHEAD, which consent shall not be unreasonably withheld or delayed.

(b) WHITEHEAD Right to Prosecute. In the event that FATE is unsuccessful in persuading the alleged infringer to desist or fails to have initiated an infringement action within [***] after FATE first becomes aware of the basis for such action, WHITEHEAD will have the right, at its sole discretion, to prosecute such infringement under its sole control and expense and any recovery obtained will belong to WHITEHEAD.

7.3 Declaratory Judgment Actions. In the event that a PATENT CHALLENGE is brought against WHITEHEAD or FATE by a third party, WHITEHEAD, at its option, will have the right within twenty (20) days after commencement of such action to take over the sole defense of the action at its own expense. If WHITEHEAD does not exercise this right, FATE may take over the sole defense of the action at FATE's sole expense, subject to Sections 7.4 and 7.5.

7.4 Offsets. FATE may offset a total of [***] of any expenses incurred under Sections 7.2 and 7.3 against any payments due to WHITEHEAD under Article 4, provided that in no event will such payments under Article 4, [***] in any REPORTING PERIOD. If such [***] of FATE's expenses and costs exceeds the amount of royalties deducted by FATE for any REPORTING PERIOD, then FATE may to that extent reduce the royalties due to WHITEHEAD in succeeding REPORTING PERIODS, but never by more than [***] of the total royalty due in any one calendar year with respect to the patent(s) subject to such suit.

7.5 Recovery. Any recovery obtained in an action brought by FATE under Sections 7.2 or 7.3 will be distributed as follows:

(i) each party will be reimbursed for any expenses incurred in the action (including the amount of any royalty or other payments withheld from WHITEHEAD as described in Section 7.4);

(ii) compensation for lost profits on the infringing sales will be paid to FATE, and FATE shall make payments to WHITEHEAD according to Article 4 based upon hypothetical NET SALES that FATE would have paid to WHITEHEAD if FATE had sold the infringing products, processes and services rather than the infringer;

(iii) compensation for a reasonable royalty on the infringing sales will be divided as [***] to FATE and the remainder to WHITEHEAD;

(iv) additional damages (for example, enhanced or punitive damages) will be [***].

7.6 Cooperation. Each party agrees to cooperate in any action under this Article 7 which is controlled by the other party, provided that the controlling party reimburses the cooperating party promptly for any costs and expenses incurred by the cooperating party in connection with providing such assistance.

7.7 Right to Sublicense. So long as FATE remains the exclusive licensee of the PATENT RIGHTS in the FIELD in the TERRITORY, FATE will have the sole right to

sublicense any alleged infringer in the FIELD in the TERRITORY for future use of the PATENT RIGHTS in accordance with the terms and conditions of this Agreement relating to sublicenses. Any upfront fees as part of such sublicense shall be treated as set forth in Article 4.

**8. PATENT CHALLENGE**

8.1 In the event that (1) FATE or AFFILIATES brings a PATENT CHALLENGE against WHITEHEAD, or (2) FATE or AFFILIATES assists another party in bringing a PATENT CHALLENGE against WHITEHEAD (except as required under a court order or subpoena), WHITEHEAD may terminate this Agreement immediately upon written notice to FATE without any liability and without any opportunity to cure by FATE. In the event that (3) SUBLICENSEE brings a PATENT CHALLENGE against WHITEHEAD, or (4) SUBLICENSEE assists another party in bringing a PATENT CHALLENGE against WHITEHEAD (except as required under a court order or subpoena), FATE agrees that it will immediately terminate such sublicense.

8.2 If Section 8.1 is determined to be unenforceable or illegal and, in the event that (1) FATE or AFFILIATES brings a PATENT CHALLENGE against WHITEHEAD, or (2) FATE or AFFILIATES assists another party in bringing a PATENT CHALLENGE against WHITEHEAD (except as required under a court order or subpoena), or (3) SUBLICENSEE brings a PATENT CHALLENGE against WHITEHEAD and FATE does not terminate such sublicense, or (4) SUBLICENSEE assists another party in bringing a PATENT CHALLENGE against WHITEHEAD (except as required under a court order or subpoena) and FATE does not terminate such sublicense, then the following:

(a) WHITEHEAD, in its sole discretion, may choose at any time following the initiation of such PATENT CHALLENGE to grant one or more licenses to third parties under the PATENT RIGHTS, including without limitation, to develop, make, have made, use, have used, sell, have sold, offer to sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY;

(b) WHITEHEAD, in its sole discretion, may choose at any time following the initiation of such PATENT CHALLENGE to grant one or more licenses to third parties under the TANGIBLE PROPERTY, including without limitation, to develop, make, have made, use, have used, sell, have sold, offer to sell, have offered to sell, lease, have leased, import and have imported LICENSED PRODUCTS in the FIELD in the TERRITORY;

(c) The exclusive period under Section 2.2(a) and Section 2.2(b) will immediately terminate;

(d) FATE, AFFILIATES, and SUBLICENSEES shall immediately destroy all TANGIBLE PROPERTY, and FATE shall confirm such destruction in writing to WHITEHEAD;

(e) FATE [***] and

(f) FATE shall [***] the PATENT CHALLENGE.

**9. INDEMNIFICATION AND INSURANCE**

9.1 Indemnification.

(a) Indemnity. FATE shall indemnify, defend, and hold harmless WHITEHEAD and its current and former directors, governing board members, trustees, officers, faculty, staff, employees, students, and agents and their respective successors, heirs, and assigns (the "**Indemnitees**"), from and against any claim, liability, cost, damage, deficiency, loss, expense, or obligation of any kind or nature (including without limitation reasonable attorneys' fees and other costs and expenses of litigation) (collectively the "**Claims**") incurred by or imposed upon any of the Indemnitees in connection with [***].

FATE'S indemnification under Section 9.1(a)(1) applies to any liability, damage, loss or expense whether or not [***]. FATE'S indemnification under Section 9.1(b)(ii) through 9.l(b)(iv) does not apply to any liability, damage, loss or expense to the extent that it is attributable [***].

(b) Procedures. The Indemnitees agree to provide FATE with prompt written notice of any claim, suit, action, demand, or judgment for which indemnification is sought under this Agreement. FATE agrees, at its own expense, to provide attorneys reasonably acceptable to WHITEHEAD to defend against any such Claims brought or filed against any of the Indemnitees whether or not such actions are rightfully brought. The Indemnitees shall cooperate fully with FATE in such defense and will permit FATE to conduct and control such defense and the disposition of such Claims (including all decisions relative to litigation, appeal, and settlement); provided, however, that any Indemnitee will have the right to retain its own counsel, at the expense of FATE, if representation of such Indemnitee by the counsel retained by FATE would be inappropriate because of actual or potential differences in the interests of such Indemnitee and any other party represented by such counsel. FATE shall keep WHITEHEAD informed of the progress in the defense and disposition of such Claim and to consult with WHITEHEAD with regard to any proposed settlement.

The right of FATE to assume the defense of any action is limited to that part of the action commenced against WHITEHEAD and/or Indemnitees that relates to FATE's obligation of indemnification and holding harmless.

FATE shall require any AFFILIATE(S) or SUBLICENSEE(S) to indemnify, hold harmless and defend WHITEHEAD under the same terms set forth in this Section 9.1.

9.2 Insurance. FATE shall obtain and carry in full force and effect commercial general liability insurance and, beginning at the time any product, process, or service relating to, or developed pursuant to, this Agreement is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by FATE, AFFILIATE(S), or SUBLICENSEE(S), product liability insurance and/or errors and omissions insurance, as appropriate, which will protect FATE and Indemnitees with respect to events covered by Section 9.1(a) above. Such insurance will:

(i) be issued by an insurer licensed to practice in the Commonwealth of Massachusetts or an insurer pre-approved by WHITEHEAD, such approval not to be unreasonably withheld;

(ii) list WHITEHEAD as an additional insured thereunder; and

(iii) require thirty (30) days written notice to be given to WHITEHEAD prior to any cancellation or material change thereof.

The limits of such insurance will not be less than [***] per occurrence with an aggregate of [***] for bodily injury including death; and [***] per occurrence with an aggregate of [***] for property damage; and, if appropriate, [***] per occurrence with an aggregate of [***] for errors and omissions.

In the alternative, FATE may self-insure subject to prior approval of WHITEHEAD. FATE shall provide WHITEHEAD with Certificates of Insurance evidencing compliance with this Section. FATE shall provide WHITEHEAD with written notice at least thirty (30) days prior to the cancellation, non renewal or material change in such insurance; if FATE does not obtain replacement insurance providing comparable coverage within such thirty (30)-day period, WHITEHEAD has the right to terminate this Agreement effective at the end of such thirty (30)-day period without any notice or additional waiting periods.

The minimum amounts of insurance coverage required under these provisions may not be construed to create a limit of FATE's liability with respect to its indemnification obligation under Section 9.1 of this Agreement.

FATE shall maintain such comprehensive general liability insurance beyond the expiration or termination of this Agreement during (a) the period that any product, process, or service, relating to, or developed pursuant to, this Agreement is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by FATE or by a SUBLICENSEE, AFFILIATE or agent of FATE and (b) a reasonable period after such time as any product, process or service relating to, or developed pursuant to, this Agreement is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals), which in no event shall be less than [***].

FATE shall require any AFFILIATE(S) or SUBLICENSEE(S) to maintain insurance in favor of WHITEHEAD and the Indemnitees under the same terms set forth in this Section 9.2.

## 10. NO REPRESENTATIONS OR WARRANTIES

WHITEHEAD hereby represents and warrants that (a) it solely and exclusively owns the patents and applications included within the PATENT RIGHTS; (b) it has the power and authority to grant the licenses provided for herein to FATE, and that it has not earlier granted, or assumed any obligation to grant, any rights in the PATENT RIGHTS to any third party that would conflict with the rights granted to FATE herein; and (c) this Agreement constitutes the

legal, valid and binding obligation of WHITEHEAD, enforceable against WHITEHEAD in accordance with its terms.

EXCEPT AS MAY OTHERWISE BE EXPRESSLY SET FORTH IN THIS AGREEMENT, WHITEHEAD MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE PATENT RIGHTS OR TANGIBLE PROPERTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, VALIDITY OF PATENT' RIGHTS CLAIMS, WHETHER ISSUED OR PENDING, AND THE ABSENCE OF LATENT OR OTHER DEFECTS, WHETHER OR NOT DISCOVERABLE. Specifically, and not to limit the foregoing, WHITEHEAD has made no investigation and makes no warranty or representation (i) regarding the validity or scope of the PATENT RIGHTS, and (ii) that the exploitation of the PATENT RIGHTS or any LICENSED PRODUCT' or methods used in making or using such TANGIBLE PROPERTY will not infringe any patents or other intellectual property rights of WHITEHEAD or of a third party.

The TANGIBLE PROPERTY is experimental in nature and will be used with prudence and appropriate caution since not all of its characteristics are known.

IN NO EVENT SHALL WHITEHEAD, ITS TRUSTEES, DIRECTORS, OFFICERS, EMPLOYEES AND/OR AFFILIATES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING ECONOMIC DAMAGES OR INJURY TO PROPERTY AND LOST PROFITS, REGARDLESS OF WHETHER WHITEHEAD SHALL BE ADVISED, SHALL HAVE OTHER REASON TO KNOW, OR IN FACT SHALL KNOW OF THE POSSIBILITY OF THE FOREGOING.

**11. ASSIGNMENT**

Neither party may assign this Agreement without the other party's prior written consent, not to be unreasonably withheld. The foregoing notwithstanding, FATE may assign this Agreement without WHITEHEAD'S consent to an AFFILIATE or in connection with a FATE change of control, merger, or consolidation, or sale of all or substantially all of its assets; provided however, that this Agreement will immediately terminate if the proposed assignee fails to agree in writing to be bound by the terms and conditions of this Agreement on or before the effective date of the assignment.

**12. GENERAL COMPLIANCE WITH LAWS**

12.1 Compliance with Laws. FATE shall use reasonable commercial efforts to comply with all commercially material local, state, federal, and international laws and regulations relating to the development, manufacture, use, and sale of LICENSED PRODUCTS.

12.2 Export Control. FATE and its AFFILIATES and SUBLICENSEES shall comply with all United States laws and regulations controlling the export of certain commodities and technical data, including without limitation all Export Administration Regulations of the United States Department of Commerce. Among other things, these laws and regulations prohibit or

require a license for the export of certain types of commodities and technical data to specified countries. FATE hereby gives written assurance that it will comply with, and will cause its AFFILIATES and SUBLICENSEES to comply with, all United States export control laws and regulations, that it bears sole responsibility for any violation of such laws and regulations by itself or its AFFILIATES or SUBLICENSEES, and that it will indemnify, defend, and hold WHITEHEAD harmless (in accordance with Section 9.1) for the consequences of any such violation.

12.3 Non-Use of Name. FATE and its AFFILIATES and SUBLICENSEES shall not use the name of "Whitehead Institute", "Massachusetts Institute of Technology", or any variation, adaptation, or abbreviation thereof, or of any of their trustees, officers, faculty, students, employees, or agents, or any trademark owned by WHITEHEAD or any terms of this Agreement in any promotional material or other public announcement or disclosure without the prior written consent of WHITEHEAD, which consent it may withhold in its sole discretion. The foregoing notwithstanding, without the consent of WHITEHEAD, (i) FATE may make factual statements during the term of this Agreement that FATE has a license from WHITEHEAD under one or more of the patents and/or patent applications comprising the PATENT RIGHTS, and (ii) FATE may comply with disclosure requirements of all applicable laws relating to its business, including, without limitation, United States and state securities laws.

12.4 Marking of LICENSED PRODUCTS. To the extent commercially feasible and consistent with prevailing business practices, FATE shall mark, and shall cause its AFFILIATES and SUBLICENSEES to mark, all LICENSED PRODUCTS that are manufactured or sold under this Agreement with the number of each issued patent under the PA TENT RIGHTS that applies to such LICENSED PRODUCT.

**13. TERMINATION**

13.1 Voluntary Termination by FATE. FATE will have the right to terminate this Agreement, for any reason, (i) upon at least ninety (90) days prior written notice to WHITEHEAD, such notice to state the date at least ninety (90) days in the future upon which termination is to be effective, and (ii) upon payment of all amounts due to WHITEHEAD through such termination effective date.

13.2 Cessation of Business. If FATE ceases to carry on its business related to this Agreement, becomes insolvent, makes an assignment for the benefit of creditors, or has a petition in bankruptcy filed for or against it, then WHITEHEAD will have the right to terminate this Agreement immediately upon written notice to FATE.

13.3 Termination for Default.

(a) Nonpayment. In the event FATE fails to pay any amounts due and payable to WHITEHEAD hereunder, and fails to make such payments within thirty (30) days after receiving written notice of such failure, WHITEHEAD may terminate this Agreement immediately upon written notice to FATE. Further, if an audit pursuant to Section 5.4 shows an underreporting or underpayment by FATE in excess of twenty percent (20%) for any twelve

(12)-month period, and FATE fails to make such payments within fifteen (15) days after receiving written notice of such failure, then WHITEHEAD may terminate this Agreement immediately upon written notice to FATE.

(b) Material Breach. In the event FATE commits a material breach of its obligations under this Agreement, except for breach as described in Section 3.2 and Section 13.3(a), and tails to cure that breach within ninety (90) days after receiving written notice thereof, WHITEHEAD may terminate this Agreement immediately upon written notice to FATE.

(c) Insurance. WHITEHEAD will have the right to terminate this Agreement if FATE fails to maintain the insurance required in accordance with Section 9.2.

13.4 Effect of Termination.

(a) Survival. The following provisions shall survive the expiration or termination of this Agreement: Articles 1, 9, 10, 14, 15 and 16, and Sections 5.2 (obligation to provide final report and payment), 5.4, 12.1, 12.2 and 13.4,

(b) Inventory. Upon the early termination of this Agreement, FATE, AFFILIATES and SUBLICENSEES may complete and sell any work-in-progress and inventory of LICENSED PRODUCTS that exist as of the effective date of termination, provided that:

(i) FATE pays WHITEHEAD the applicable running royalty or other amounts due on such sales of LICENSED PRODUCTS in accordance with the terms and conditions of this Agreement; and

(ii) FATE and its AFFILIATES and SUBLICENSEES shall complete and sell all work-in-progress and inventory of LICENSED PRODUCTS within six (6) months after the effective date of termination.

(c) TANGIBLE PROPERTY. Except as provided in Section 13.4(b), FATE and AFFILIATES shall destroy all TANGIBLE PROPERTY upon termination. FATE shall confirm such destruction in writing to WHITEHEAD.

(d) Sublicenses. Upon termination, SUBLICENSEES in good standing may continue by way of a direct license with WHITEHEAD in accord with Section 2.3. If a SUBLICENSEE in good standing does not continue by way of a direct license with WHITEHEAD, then such SUBLICENSEE shall destroy all TANGIBLE PROPERTY and confirm such destruction in writing to WHITEHEAD.

(e) Pre-termination Obligations. In no event will termination of this Agreement release FATE, AFFILIATES, or SUBLICENSEES from the obligation to pay any amounts that became due on or before the effective date of termination.

**14. DISPUTE RESOLUTION**

14.1 Mandatory Procedures. The parties agree that any dispute arising out of or relating to this Agreement shall be resolved solely by means of the procedures set forth in this Article, and that such procedures constitute legally binding obligations that are an essential provision of this Agreement. If any party fails to observe the procedures of this Article, as may be modified by their written agreement, the other party may bring an action for specific performance of these procedures in any court of competent jurisdiction.

14.2 Equitable Remedies. Although the procedures specified in this Article are the sole and exclusive procedures for the resolution of disputes arising out of or relating to this Agreement, any party may seek a preliminary injunction or other provisional equitable relief if, in its reasonable judgment, such action is necessary- to avoid irreparable harm to itself or to preserve its rights under this Agreement.

14.3 Dispute Resolution Procedures.

(a) Mediation. In the event any dispute arising out of or relating to this Agreement remains unresolved within [*******] from the date the affected party informed the other parties of such dispute, any party may initiate mediation upon written notice to the other party ("**Notice Date**"), whereupon all parties shall be obligated to engage in a mediation proceeding under the then current Center for Public Resources ("**CPR**") Model Procedure for Mediation of Business Disputes (http://www.cpTadr.org), except that specific provisions of this Article shall override inconsistent provisions of the CPR Model Procedure. The mediator will be selected from the CPR Panels of Neutrals. If the parties cannot agree upon the selection of a mediator within [*******] after the Notice Date, then upon the request of any party, the CPR shall appoint the mediator. The parties shall attempt to resolve the dispute through mediation until the first of the following occurs:

(i) the parties reach a written settlement;

(ii) the mediator notifies the parties in writing that they have reached an impasse;

(iii) the parties agree in writing that they have reached an impasse; or

(iv) the parties have not reached a settlement within [*******] after the Notice Date.

(b) Trial Without Jury. If the parties fail to resolve the dispute through mediation, or if no party elects to initiate mediation, each party shall have the right to pursue any other remedies legally available to resolve the dispute, provided, however, that the parties expressly waive any right to a jury trial in any legal proceeding under this Article.

14.4 Performance to Continue. Each party shall continue to perform its undisputed obligations under this Agreement pending final resolution of any dispute arising out of or

relating to this Agreement; provided, however, that a party may suspend performance of its undisputed obligations during any period in which the other party fails or refuses to perform its undisputed obligations. Nothing in this Article is intended to relieve FATE from its obligation to make undisputed payments pursuant to Articles 4 and 6 of this Agreement.

14.5 Statute of Limitations. The parties agree that all applicable statutes of limitation and time-based defenses (such as estoppel and laches) will be tolled while the procedures set forth in Section 14.3(a) are pending. The parties shall cooperate in taking any actions necessary to achieve this result.

## 15. CONFIDENTIALITY

15.1 Confidential Information.

(a) All information disclosed by one party to the other party hereunder including but not limited to this Agreement, progress reports, and royalty reports (the "**Confidential Information**") will be maintained in confidence by the receiving party and will not be disclosed to any third party or used for any purpose except as set forth herein without the prior written consent of the disclosing party, for a period of seven (7) years from disclosure of such Confidential Information, except to the extent that such information is:

(i) known by receiving party at the lime of its receipt, and not through a prior disclosure by the disclosing party, as documented by the receiving party's business records;

(ii) becomes part of the public domain through no fault of the receiving party;

(iii) subsequently disclosed to the receiving party by a third party who may lawfully do so and is not under an obligation of confidentiality to the disclosing party; or

(iv) developed by the receiving party independently of information received from the disclosing party, as documented by the receiving party's business records.

(b) Notwithstanding the foregoing, a party may disclose Confidential Information:

(i) to governmental or other regulatory agencies in order to obtain patents or to gain or maintain approval to conduct clinical trials or to market LICENSED PRODUCT, provided however that such disclosure may be only lo the extent reasonably necessary to obtain patents or authorizations.

(ii) deemed necessary by FATE to be disclosed to AFFILIATES, SUBLICENSEES, agents, consultants, and/or other third parties for the development

and/or commercialization of LICENSED PRODUCT' and/or in connection with a licensing transaction and/or a permitted assignment under this Agreement, and/or loan, financing or investment and/or acquisition, merger, consolidation or similar transaction (or for such entities to determine their interest in performing such activities) in each case on the condition that any third party to whom such disclosures arc made agree to be bound by a confidentiality agreement under terms substantially similar to those of this Agreement.

Confidential Information that is disclosed under 15.1(b)(i) or 15.1(b)(ii) will remain otherwise subject to the confidentiality and non-use provisions hereof.

15.2 Judicial or Administrative Process. If a party is required by judicial or administrative process to disclose Confidential Information, such party shall promptly inform the other party of the disclosure that is being sought in order to provide the other party an opportunity to challenge or limit the disclosure obligations.

Confidential Information that is disclosed by judicial or administrative process will remain otherwise subject to the confidentiality and non-use provisions hereof, and the disclosing party, pursuant to law or court order, shall take all steps reasonably necessary, including without limitation obtaining an order of confidentiality, to ensure the continued confidential treatment of such Confidential Information.

15.3 SEC Filings. Either party may disclose the terms of this Agreement to the extent required, in the reasonable opinion of such party's legal counsel, to comply with applicable laws, including without limitation the rules and regulations promulgated by the United States Securities and Exchange Commission (the "**SEC**"). Notwithstanding the foregoing, before disclosing this Agreement or any of the terms hereof pursuant to this Section 15.3, the parties shall consult with one another on the terms of this Agreement to be redacted in making any such disclosure. If a party discloses this Agreement or any of the terms hereof in accordance with this Section 15.3, such party agrees, at its own expense, to seek confidential treatment of portions of this Agreement or such terms, as may be reasonably requested by the other party.

**16. MISCELLANEOUS**

16.1 Notice. Any notices required or permitted under this Agreement will be in writing, will specifically refer to this Agreement, and will be sent by hand, recognized national overnight courier, confirmed facsimile transmission, confirmed electronic mail, or registered or certified mail, postage prepaid, return receipt requested, to the following addresses or facsimile numbers of the parties:

If to WHITEHEAD:

Whitehead Institute for Biomedical Research
Nine Cambridge Center
Cambridge, MA 02142
Attention: Intellectual Property Office
Tel: 617-258-5104
Fax: 617-258-6204

If to FATE:

Fate Therapeutics, Inc.
10931 N. Torrey Pines Road, Suite 107
La Jolla, CA 92037
Attention: Chief Financial Officer
Tel: 858-875-1800
Fax: 858-875-1843

All notices under this Agreement will be deemed effective upon receipt. A party may change its contact information immediately upon written notice to the other parties in the manner provided in this Section.

16.2 Governing Law. This Agreement and all disputes arising out of or related to this Agreement, or the performance, enforcement, breach or termination hereof, and any remedies relating thereto, shall be construed, governed, interpreted and applied in accordance with the laws of the Commonwealth of Massachusetts, U.S.A., without regard to conflict of laws principles, except that questions affecting the construction and effect of any patent shall be determined by the law of the country in which the patent shall have been granted. The state and federal courts having jurisdiction over Cambridge, MA, U.S.A., provide the exclusive forum for any PATENT CHALLENGE and/or any court action between the parties relating to this Agreement. FATE submits to the jurisdiction of such courts and waives any claim that such court lacks jurisdiction over FATE or its AFFILIATES or constitutes an inconvenient or improper forum.

16.3 Force Majeure. No party will be responsible for delays resulting from causes beyond the reasonable control of such party, including without limitation fire, explosion, flood, war, strike, or riot, provided that the nonperforming party uses commercially reasonable efforts

to avoid or remove such causes of nonperformance and continues performance under this Agreement with reasonable dispatch whenever such causes are removed.

16.4 Amendment and Waiver. This Agreement may be amended, supplemented, or otherwise modified only by means of a written instrument signed by the parties. Any waiver of any rights or failure to act in a specific instance will relate only to such instance and will not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar.

16.5 Severability. In the event that any provision of this Agreement will be held invalid or unenforceable for any reason, such invalidity or unenforceability will not affect any other provision of this Agreement, and the parties shall negotiate in good faith to modify the Agreement to preserve (to the extent possible) their original intent. If the parties fail to reach a modified agreement within thirty (30) days alter the relevant provision is held invalid or unenforceable, then the dispute will be resolved in accordance with the procedures set forth in Article 14. While the dispute is pending resolution, this Agreement will be construed as if such provision were deleted by agreement of the parties.

16.6 Binding Effect. This Agreement will be binding upon and inure to the benefit of the parties and their respective permitted successors and assigns.

16.7 Headings. All headings are for convenience only and will not affect the meaning of any provision of this Agreement.

16.8 Entire Agreement. This Agreement and the Bilateral Nondisclosure Agreement of March 25, 2008, constitute the entire agreement between the parties with respect to its subject matter and supersedes all prior agreements or understandings between the parties relating to its subject matter.

[Signatures on the following page.]

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives.

| **For WHITEHEAD:** | | **For FATE:** | |
|---|---|---|---|
| By: | /s/ Martin A. Mullins | By: | /s/ Paul Grayson |
| Name: | Martin A. Mullins | Name: | Paul Grayson |
| Title: | Vice President | Title: | President & CEO |
| Date: | 2/24/2009 | Date: | 2/24/09 |

## APPENDIX A

List of Patent Applications and Patents

**WHITEHEAD Case No. [***]**

**WHITEHEAD Case No. [***]**

**WHITEHEAD Case No. [***]**

**WHITEHEAD Case No. [***]**

* Confidential Information, indicated by [***], has been omitted from this filing and filed separately with the Securities and Exchange Commission

**APPENDIX B**

List of Countries (excluding United States) for which
PATENT RIGHTS Applications Will Be Filed, Prosecuted and Maintained

The parties will mutually agree on which countries to prosecute the PATENT RIGHTS.

**APPENDIX C**

Initial Common Stock Distribution to WHITEHEAD and Whitehead Holders

| | |
|---|---|
| To WHITEHEAD | [number] |
| To Whitehead Holders: [***] | |
| Total number of shares | [***] |

Confidential Information, indicated by [***], has been omitted from this filing and filed separately with the Securities and Exchange Commission

**APPENDIX D**

Tangible Property

This Appendix D shall be completed by FATE prior to March 31, 2009, to list the TANGIBLE PROPERTY.

FATE acknowledges and understands that there may be tangible property of interest to FATE and covered under patent rights that are not subject to this Agreement.

**APPENDIX E**

TANGIBLE PROPERTY not subject to exclusivity

[To be completed by WHITEHEAD based upon Appendix D.]

**Exhibit 10.20**

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED (INDICATED BY: [***]) FROM THE EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY EXPOSED.

# LICENSE AGREEMENT

**by and between**

**THE SCRIPPS RESEARCH INSTITUTE,**
**a California nonprofit**
**public benefit corporation**

**and**

**FATE THERAPEUTICS, INC.,**
**a Delaware corporation**

**LICENSE AGREEMENT**

This License Agreement is entered into and made effective as of this 13th day of July, 2009 (the "**Effective Date**"), by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("**TSRI**"), and Fate Therapeutics, Inc., a Delaware corporation ("**Licensee**"), each located at the respective address set forth in Section 14.17 below, with respect to the facts set forth below.

**RECITALS**

A. TSRI is the owner of certain Licensed Patent Rights and has the right to grant licenses under such Licensed Patent Rights, subject to the rights set forth in Sections 2.8 and 2.9 of this Agreement.

B. TSRI desires to have the Licensed Patent Rights developed and commercialized to benefit the public and is willing to grant a license thereunder to Licensee.

C. Licensee desires to obtain a license under the Licensed Patent Rights and to use the Licensed Biological Materials pursuant to the terms and conditions set forth herein.

**NOW, THEREFORE**, in consideration of the mutual covenants and conditions set forth herein, TSRI and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth herein.

1.1 Affiliate. The term "**Affiliate**" shall mean any entity which directly or indirectly controls, or is controlled by, or is under common control with, Licensee. The term "control" as used herein means (a) in the case of corporate entities, direct or indirect ownership of at least fifty percent (50%) of the stock or shares entitled to vote for the election of directors or with the power to direct the management and policies of such corporate entities; or (b) in the case of non-corporate entities, direct or indirect ownership of at least fifty percent (50%) of the equity interests with the power to direct the management and policies of such non-corporate entities. All Affiliates shall be deemed to be licensees under Section 2.1-2.4 of this Agreement.

1.2 Confidential Information. The term "**Confidential Information**" shall mean any and all proprietary or confidential information of TSRI or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Confidential Information shall also include any information which, given the circumstances surrounding disclosure, would be considered confidential by the disclosing party. Information shall not be considered confidential to the extent that either party can establish by competent proof that it:

a. Is publicly disclosed through no fault of the receiving party, either before or after it becomes known to the receiving party; or

b. Was known to the receiving party without obligation of confidentiality prior to the date of this Agreement, which knowledge was acquired independently and not from the disclosing party (including such party's employees, consultants or agents); or

c. Is subsequently disclosed to the receiving party without obligation of confidentiality in good faith by a third party who is not under any obligation to maintain the confidentiality of such information, and without breach of this Agreement by a receiving party; or

d. Has been published by a third party not in breach of any obligation of confidentiality; or

e. Was independently developed by the receiving party without the use of or reliance on the Confidential Information of the disclosing party.

If Confidential Information is required to be disclosed by the receiving party by law or court order, the party required to make such disclosure shall limit the same to the minimum required to comply with the law or court order, and shall use reasonable efforts to attempt to seek confidential treatment for that disclosure, and prior to making such disclosure by the receiving party shall notify the other party, not later than ten (10) days (or such shorter period of time as may be reasonably practicable under the circumstances) before the disclosure in order to allow that other party to comment and/or to obtain a protective or other order, including extensions of time and the like, with respect to such disclosure.

1.3 Field. The term "**Field**" shall mean all fields.

1.4 Licensed Biological Materials. The term "**Licensed Biological Materials**" shall mean the materials identified in Exhibit A and supplied by TSRI to Licensee, together with any progeny or mutants of such materials, or unmodified derivatives of such materials (defined as substances created by Licensee that constitute an unmodified functional sub-unit or product expressed by such materials).

1.5 Licensed Patent Rights. The term "**Licensed Patent Rights**" shall mean rights arising out of or resulting from (a) the U.S./PCT Patent Application(s) set forth on Exhibit B; (b) the foreign patent applications associated with the application(s) referenced in subclause (a) above; (c) the patents issued from the application(s) referenced in subclauses (a) and (b), and in subclauses (d) and (e) below; (d) divisional, continuations, reissues, reexaminations, renewals, and extensions of any patent or application set forth in subclauses (a)-(c) above; and (e) all claims of continuations-in-part that are entitled to the benefit of the priority date of the application(s) referenced in subclause (a) above.

1.6 Licensed Product. The term "**Licensed Product**" shall mean any product (a) the manufacture, use, importation, sale or offer for sale of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights, or (b) that is comprised of, utilizes or incorporates Licensed Biological Materials, or (c) that is discovered, developed or made using a Licensed Process.

1.7 Licensed Process. The term "**Licensed Process**" shall mean any method or process (a) claimed in a Valid Claim of any of the Licensed Patent Rights, (b) the practice of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights, or (c) that utilizes or incorporates Licensed Biological Materials.

1.8 Net Sales. The term "**Net Sales**" shall mean the gross amount invoiced by Licensee and its Affiliates or its Sublicensees, or any of them, on all sales of Licensed Products and Licensed Processes, less (a) discounts actually allowed; (b) credits for claims, allowances, retroactive price reductions or returned or rejected goods; (c) amounts invoiced and actually paid for third party transportation, insurance or shipping charges to an end user of the Licensed Product or Licensed Process; (d) any taxes or other governmental charges actually paid in connection with the sale, transportation, or delivery of Licensed Products or Licensed Processes (but excluding what are commonly known as income taxes and value-added taxes). Net Sales shall include all consideration invoiced by Licensee, its Affiliates or its Sublicensees in exchange for any Licensed Products or Licensed Processes including without limitation any monetary payments or, with regard to any other property paid in exchange for any Licensed Products or Licensed Processes, an amount in cash equal to the fair market value of such property. For purposes of determining Net Sales, a sale shall be deemed to have occurred when an invoice therefore is generated, the Licensed Product shipped for delivery or the Licensed Process completed or provided. Sales of Licensed Products or Licensed Processes by and amongst Licensee, its Affiliates or Sublicensees shall be excluded, unless the Affiliates or Sublicensees consume the Licensed Products or Licensed Processes, and only the subsequent sale of such Licensed Products or Licensed Processes to unrelated parties shall be deemed Net Sales hereunder.

1.9 Research Tool. The term "**Research Tool**" shall mean a Licensed Product, Licensed Process or Licensed Biological Material that is designed and developed solely for use in performing basic research including, without limitation, basic research having as its primary purpose understanding the biology or pathology of cells or cell lines and diseases or disorders affecting them, or education purposes, and not for Commercial Drug Development purposes. "**Commercial Drug Development**" includes the following activities: (a) any human clinical use or veterinary use (including, without limitation, therapeutic, prophylactic or diagnostic use); (b) any screening of compound libraries; (c) any development, manufacture or provision of any commercial pharmaceutical, healthcare or consumer products, processes or services; or (d) any provision of services related to the above (a)-(c).

1.10 Sublicensee. The term "**Sublicensee**" shall mean any third party (other than an Affiliate) to whom Licensee grants a sublicense with respect to the rights conferred upon Licensee under this Agreement, as contemplated by Section 2.6.

1.11 Valid Claim. The term "**Valid Claim**" shall mean a claim of any issued and unexpired patent within the Licensed Patent Rights which has not been revoked or held unenforceable, unpatentable or invalid by a decision of a court or governmental body of competent jurisdiction in a ruling that is unappealed or unappealable, and which has not been

admitted to be invalid or unenforceable through reissue or disclaimer or otherwise. The term ‘‘Valid Claim” shall also include the claims of a pending patent application within the Licensed Patent Rights which have not been (i) cancelled, withdrawn, abandoned or finally disallowed without the possibility of appeal or refilling of such application, or (ii) pending for a period of more than [***] from the date of the first examination of the patent application.

2. Grant of License.

2.1 Grant of Exclusive License for Licensed Products. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights, including, without limitation, to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported Licensed Products in the Field.

2.2 Grant of Exclusive License for Licensed Processes. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights to make and have made, to use and have used, to practice and have practiced, to offer to sell and have offered for sale, to sell and have sold, and to import and have imported any Licensed Processes in the Field.

2.3 Grant of Exclusive License for Licensed Biological Materials. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, to the Licensed Biological Materials to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported, and to transfer and distribute any Licensed Biological Materials in the Field.

2.4 Research Tools.

a. For clarity, Research Tools are subject to the license grants in Sections 2.1-2.3, Section 2.8, the retained rights set forth in Sections 2.9, and the due diligence requirements in Section 6.

b. If TSRI reasonably believes that a Licensed Product, Licensed Process or Licensed Biological Material should be classified as a Research Tool hereunder, [***.] If the Parties are unable to reach agreement regarding the classification within [***] after receipt of such notice, either party may request resolution of such issue in accordance with the dispute resolution process set forth in Section 14.9 (and, during any such process, such Licensed Product, Licensed Process or Licensed Biological Material shall not be classified as a Research Tool under this Agreement).

c. If such item is ultimately classified as a Research Tool as provided above, then Licensee shall comply with the due diligence obligations set forth in Section 6.2.b.

2.5 Covenants Not To Grant Third Party Licenses. As of the Effective Date and until this Agreement is terminated, TSRI covenants not (i) to grant to any third party any licenses or any rights to Licensed Patent Rights in the Field, or (ii) to grant to any third party any licenses or any rights to, or to transfer samples of, Licensed Biological Materials in the Field, except as permitted under Sections 2.8 and 2.9 hereof.

2.6 Sublicensing. Licensee shall have the right to grant and authorize sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement. Sublicensees shall not have the right to further sublicense without TSRI's prior written consent, which will not be unreasonably withheld or delayed. Any sublicense granted under this Section 2.6 shall be subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement (including the provisions regarding governmental interest, reservation of rights, development efforts, reporting, audit rights, indemnity, insurance, limited warranty, disclaimer, limitation of liability, confidentiality, and rights upon expiration or termination). It is anticipated that Licensee may enter into agreements with third parties wherein some of the rights granted herein will be transferred to third parties who are performing a service for Licensee, such as a contract manufacturer or contract research organization, but specifically excluding agreements that contain the rights to sell, or offer for sale Licensed Products or Licensed Processes. These types of service agreements are not subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement but shall include the following provisions contained herein: indemnity, insurance, limited warranty, disclaimer, limitation of liability, and confidentiality. In the event of a conflict between this Agreement and the terms of any sublicense, the terms of this Agreement shall control. Licensee shall forward to TSRI a copy of any and all fully executed sublicense and service agreements within thirty (30) days of execution.

2.7 No Other License. This Agreement confers no license or rights by implication, estoppel, or otherwise under any patent applications or patents or other intellectual property of TSRI other than Licensed Patent Rights regardless of whether such patents or intellectual property are dominant or subordinate to Licensed Patent Rights.

2.8 Governmental Interest. Licensee and TSRI acknowledge that TSRI has received, and expects to continue to receive, funding from the United States Government in support of TSRI's research activities. Licensee and TSRI acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to the rights of the United States Government, existing and as amended, which may arise or result from TSRI's receipt of research support from the United States Government, including but not limited to, 37 CFR 401, the NIH Grants Policy Statement and the NIH Guidelines for Obtaining and Disseminating Biomedical Research Resources.

2.9 Reservation of Rights. TSRI reserves the right to use for any internal basic research or educational purposes any Licensed Patent Rights and Licensed Biological Materials licensed hereunder, without TSRI being obligated to pay Licensee any royalties or other compensation or to account to Licensee in any way. During the term, including any extension thereof, of the Research Funding and Option Agreement dated February 19, 2008

between Licensee and TSRI ("**Research Agreement**"), TSRI will not enter into any agreements with any other third party for the performance of sponsored research in the same field of research described in Appendix A of such Research Agreement.

In addition, TSRI reserves the right to grant, non-exclusive licenses to use the Licensed Patent Rights and Licensed Biological Materials for internal basic research and educational purposes to other nonprofit or academic institutions, and in no event for any Commercial Drug Development activities. TSRI may distribute Licensed Biological Materials to other nonprofit or academic institutions (but in no event to any for-profit third party) for the uses expressly permitted above, under the terms of a Material Transfer Agreement with such institution (an "**MTA**"). Licensee may request on an annual basis a list of the parties with whom TSRI has entered into an MTA for Licensed Patent Rights and Licensed Biological Materials, and TSRI shall provide such list within thirty (30) days of its receipt of such request by Licensee.

2.10 Know-how License. TSRI grants to Licensee a non-exclusive license to utilize the information, and materials listed on Exhibit D in the exploitation of the Licensed Patent Rights.

3. Royalties.

3.1 License Issue Fee. Licensee agrees to pay and shall pay to TSRI a noncreditable, nonrefundable license issue fee in the amount of Ten Thousand U.S. Dollars (U.S. $10,000) within fifteen (15) days of the Effective Date (the "**License Issue Fee**"). Failure of Licensee to make this payment shall render this Agreement null and void (ab initio).

3.2 Minimum Annual Royalty. Licensee agrees to pay and shall pay to TSRI a nonrefundable minimum annual royalty in the amount of [***]. The first payment is due no later than January 1, 2010 and on January f of each subsequent calendar year until the first January 1 after the first commercial sale of the first Licensed Product by Licensee or any of its Sublicensees, at which time the amount of the minimum annual royalty shall become and shall remain [***] (the "**Minimum Annual Royalty Fee**"). Such payments shall be credited against running royalties due for that calendar year and Licensee's royalty reports shall reflect such a credit. Such payments shall not be credited against milestone payments (if any), Sublicensing Payments (if any), nor against royalties due for any preceding or subsequent calendar year.

3.3 Running Royalties. Licensee agrees to pay and shall pay to TSRI a running royalty, on a country-by-country basis, in the following percentage amounts of Net Sales of Licensed Products sold or transferred, or Licensed Processes performed, by Licensee, Affiliates or Sublicensees,

a. where such sale or transfer or performance in the applicable country then infringes one or more Valid Claims contained in the Licensed Patent Rights for such country: (i) [***] (ii) [***] (iii) [***] and (iv) [***]; *provided*, *however*, where such sale or transfer or performance in the applicable country does not then infringe one or more Valid Claims contained in the Licensed Patent Rights for such country, the running royalty percentages as set forth above in 3.3.a(i)-(iv), as applicable, shall be reduced by [***]; and

b. where the manufacture, use or sale of such Licensed Product or Licensed Process is not covered by a Valid Claim in any country but utilizes, is comprised of or , incorporates Licensed Biological Materials or was discovered, developed or made using any Licensed Process: [***] in any country.

3.4 Royalty Increase. Notwithstanding Section 3.3, in the event Licensee, an Affiliate, or a Sublicensee directly or indirectly initiates any action or proceeding in or before any court or patent office alleging that (i) any of the Licensed Patent Rights are invalid or unenforceable, or (ii) no royalties, Sublicense Payments, milestone payments, patent costs or other monies are due or required to be paid to TSRI under this Agreement because some or all of the Licensed Patent Rights are invalid or unenforceable (collectively "**Challenges**"), the royalty rates specified in Section 3.3 shall be increased to the following rates: [***]; *provided*, *however*, that such increase shall only be applied to a Licensed Product and/or a Licensed Process covered by the Licensed Patent Right(s) that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to a Licensed Product and/or a Licensed Process that is covered by Licensed Patent Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, *provided* that at least one (1) claim that covers such Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. Licensee (i) agrees that [***].

3.5 Royalty Credit. If Licensee, its Affiliate or its Sublicensee is required to license or acquire technology (including, but not limited to, patent rights and/or other intellectual property rights) from a third party in order to practice the Licensed Patent Rights or to develop or commercialize a Licensed Product or Licensed Process because the exploitation of the Licensed Patent Rights would infringe that third party's intellectual property rights without obtaining a license to such third party technology, [***], then Licensee may deduct up to [***] of the amount paid to such third party from the payments owing to TSRI for such Licensed Product or Licensed Process [***]. The above offset right is subject to the requirement that Licensee, its Affiliate or its Sublicensee shall not decrease the royalty or other amounts owed to TSRI under this Agreement by more than [***] of the amount due. Notwithstanding the above, Licensee, its Affiliate or its Sublicensee shall have no right to deduct or offset any royalties or other amounts with respect to any third party technology that is the subject of any cross license or similar arrangements (whether in the same or related transactions) where Licensee, its Affiliate or its Sublicensee grants or provides to such third party or its affiliates licenses, options or other rights to existing or future technology, intellectual property, research or development activities or other information or materials. Licensee will give TSRI advance written notice of any third party arrangement sufficiently prior to seeking to deduct any payments to the third party under the terms of this Section 3.5 in order to allow TSRI and Licensee to mutually determine whether such third party's technology is required in order to practice or exploit the Licensed Patent Rights.

3.6 Combination Products. If a Licensed Product or Licensed Process is sold in combination with another component(s), which other component(s) if sold alone would not be

subject to a royalty payment hereunder, then Net Sales as applicable, from such combination sales, for purposes of calculating the amounts due under this Section 3, shall be calculated by multiplying the gross selling price of the combination product by the fraction A/(A+B), where A is the gross selling price, during the royalty period in question, of the Licensed Product or Licensed Process sold separately, and B is the gross selling price, during the royalty period in question, of the other component(s), sold separately. If the other component(s) are not sold separately during that royalty period, then the Net Sales, as applicable, on the combination product shall be as reasonably allocated between such Licensed Product and such other component(s) as mutually agreed upon by Licensee and TSRI based on the relative value contributed by each component; *provided*, *however*, that the Net Sales allocated to such Licensed Product shall not be less than [***] of the Net Sales of such combination product.

3.7 Royalty Floor. In no event may the royalty owed to TSRI be reduced by more than [***]. Licensee may utilize either the Combination Products or the Royalty Credit calculation at its discretion, but may not use both.

3.8 No Multiple Royalties. No multiple royalties shall be due because any Licensed Product or Licensed Process is covered by more than one of the Licensed Patent Rights. In such case, Licensee shall pay only one royalty at the highest of the applicable rates pursuant to Section 3.3 above.

3.9 Arms-Length Transactions. On sales of Licensed Products or Licensed Processes which are made in other than an arm's-length transaction, the value of the Net Sales attributed under this Section 3 to such a transaction shall be that which would have been received in an arm's-length transaction, based on sales of like quality and quantity products, services or processes on or about the time of such transaction.

3.10 Duration of Royalty Obligations. The royalty obligations of Licensee as to each Licensed Product or Licensed Process shall continue on a country-by-country basis until (a) (i) the expiration of the last to expire of a Valid Claim that covers such Licensed Product or Licensed Process in that country, or (ii) in the countries where no Valid Claim was filed the royalty obligation shall run concurrent with the last to expire Valid Claim in the United States or Europe, or (b) for a Licensed Product or Licensed Process not covered by a Valid Claim in any country but [***] after the date of the first commercial sale of such Licensed Product or Licensed Process in such country. Upon the termination of Licensee's royalty obligations with respect to a Licensed Product or Licensed Process in a country, the license grants contained in Sections 2.1.-2.3 shall become fully paid-up, royalty-free, perpetual and irrevocable for such Licensed Product or Licensed Process in such country.

3.11 Other License Agreements.

a. In the event that Licensee would be required to pay a Licensee Issue Fee under (i) any other license agreements arising from the Research Agreement or the Option Agreement dated January 5, 2009 between Licensee and TSRI ("**Option Agreement**"), entered into between Licensee and TSRI (such written agreements are collectively the "**Other License Agreements**") and (ii) Section 3.1 under this Agreement, then the maximum aggregate

Licensee Issue Fee Licensee shall be required to pay under the Other License Agreements and this Agreement shall be $[***] under the applicable sections of such agreements.

b. In the event that Licensee would be required to pay a Minimum Annual Royalty Fee under (i) any Other License Agreements and (ii) Section 3.2 under this Agreement, then (x) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements; and (y) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements.

c. In the event that Licensee would, in connection with the sale or transfer of a product or service, be required to pay a royalty under (i) any Other License Agreements and (ii) Section 3.3 under this Agreement in connection with the same sale or transfer, then Licensee shall be required under the Other License Agreements and this Agreement only to pay a single royalty under such agreements in connection with such sale or transfer, such royalty to be payable at the highest of the royalties owed to TSRI under the applicable sections of such agreements.

4. Non-Royalty Revenues.

4.1 Sublicense Payments. Any and all revenues, equity interests and other consideration paid to Licensee in consideration of the grant to a third party of a sublicense to the Licensed Patent Rights and/or Licensed Biological Materials to any Sublicensee that is not an Affiliate of Licensee (collectively "**Sublicense Revenues**") shall be reported and paid to TSRI by Licensee on a quarterly basis within sixty (60) days of the end of the applicable quarter in which such Sublicense Revenues are received by Licensee. Notwithstanding the foregoing, all royalties based upon transfers or sales of Licensed Products or Licensed Processes, payments for or reimbursement for costs for research and development (to the extent itemized in the sublicense agreement), payments for or reimbursements for costs for patent prosecution, defense, enforcement and maintenance, and payments for equity and debt securities, so long as said payments reflect the current fair market value, and not a premium thereon, shall be excluded from Sublicense Revenues. Any non-cash Sublicense Revenues received by Licensee from a Sublicensee or other third party shall be valued at its fair market value as of the date of receipt, as determined in good faith by Licensee. Licensee shall pay to TSRI a non-creditable, non-refundable percentage of these Sublicense Revenues according to the following schedule ("**Sublicense Payments**"):

| Sublicense Revenues received by Licensee (on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |
| $[***] | [***] |
| More than $[***] | [***] |

Any milestone payment that Licensee makes to TSRI under Section 4.4 below upon achievement of a given milestone event by a Sublicensee would be credited against any payment due under this Section 4.1 only with respect to Sublicense Revenues received in connection with achievement of the same milestone event.

To the extent that patent rights, other intellectual property rights or other rights or obligations other than Licensed Patent Rights are sublicensed or granted by Licensee, including, without limitation, pursuant to Other License Agreements, that: portion of the consideration received by Licensee and subject to this Section 4.1 shall be equitably apportioned between the Licensed Patent Rights and those other rights and obligations, and such apportionment shall be reasonable and in accordance with customary standards in the industry. Licensee shall promptly deliver to TSRI a written report setting forth such apportionment. In the event TSRI disagrees with the determination made by Licensee, TSRI shall so notify Licensee within thirty (30) days of receipt of Licensee's report and the parties shall meet to discuss and resolve such disagreement in good faith. If the parties are unable to agree in good faith as to such fair market values within [***] days, then the matter shall be submitted in accordance with the dispute resolution process set forth in Section 14.9.

Notwithstanding the foregoing, with respect to any sublicense agreement, the parties agree that the percentage of "**Sublicense Revenues**" attributable to such sublicense agreement is not cumulative across Other License Agreements, regardless of the number of Other License Agreements that are applicable to such sublicense agreement, and regardless of whether sublicenses are granted under more than one Other License Agreement.

4.2 Increase in Sublicense Payments. Notwithstanding Section 4.1, in the event Licensee directly or indirectly initiates a Challenge in or before any court or patent office, the percentages specified in Section 4.1 shall be increased to the following rates:

| Sublicense Revenues received by Licensee (on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |
| $[***] | [***] |
| More than $[***] | [***] |

*provided, however*, that such increase shall only be applied to Sublicense Revenues derived from the Licensed Patent Rights that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to Sublicense Revenue derived from any Licensed Patent Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, *provided* that at least one (I) claim that covers a Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. [***]

4.3 Product Development Milestones. Licensee agrees to pay and shall pay to TSRI the following non-creditable, non-refundable product development milestones within sixty (60) days of the end of the applicable quarter in which the first occurrence in the United States or Europe of each milestone for the first Licensed Product or first Licensed Process to meet such milestone as follows:

| Milestone | Payment |
|---|---|
| [***] | |

Each such milestone shall be payable only once under the Agreement. In the event that any Licensed Product or Licensed Process would be subject to development milestones and payments under this Section 4.3 as well as under any Other License Agreements, then it is understood and agreed that such Licensed Product or Licensed Process shall be subject to only a single schedule of development milestones and payments under this Agreement and the Other License Agreements.

5. Royalty Payments.

5.1 Sales by Licensee. Royalties payable pursuant to Section 3 herein, shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon Net Sales during the immediately preceding calendar quarter.

5.2 Sales by Sublicensees. Licensee agrees to pay and shall pay to TSRI, or cause its Sublicensees to pay to TSRI, all royalties pursuant to Section 3 herein resulting from the Net Sales of its Sublicensees, within sixty (60) days after the end of each calendar quarter, based on Net Sales during the immediately preceding calendar quarter.

6. Development and Commercialization Activities.

6.1 Commercial Development Plan. Licensee has provided to TSRI its development plan attached hereto as Exhibit C, under which Licensee intends to bring the subject matter of the Licensed Patent Rights to the point of commercial use ("**Commercial Development Plan**"), where such Commercial Development Plan is subject to the mutual agreement by Licensee and TSRI. Pursuant to the Commercial Development Plan, Licensee shall use commercially reasonable efforts to achieve the development benchmarks specified in the Commercial Development Plan ("**Benchmarks**") within the time periods set forth in such specified in the Commercial Development Plan. Notwithstanding the foregoing, in the event that Licensee, its Affiliates or a Sublicensee, alone or together, has expended a minimum of [***] (excluding amounts paid to TSRI under the Research Funding and Option Agreement) per each calendar year during the initial [***] period of development under such Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan) ("**Initial Development Period**"), Licensee will be deemed to have complied with Licensee's obligations under this Section 6 in connection with such Commercial Development Plan for each year during such initial [***] period.

6.2 Licensee's Commercialization Activities.

a. Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence, to conduct research and achieve development of one or more Licensed Products and Licensed Processes, as promptly as is commercially feasible. Following Licensee's receipt of necessary regulatory approvals, Licensee or its Affiliates or Sublicensees shall earnestly and diligently produce and sell reasonable quantities of Licensed Products or Licensed Processes sufficient to meet market demands.

b. If a Licensed Product, Licensed Process or License Biological Material is ultimately classified as a Research Tool under Section 2.4, then Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence to distribute and make such Research Tool reasonably available to third parties on commercially reasonable terms; *provided*, *however*, that Licensee shall not be obligated to make such Research Tool available pursuant to this Section 6.2(b) to (i) third parties if Licensee reasonably believes that the manufacture, use, offer for sale, sale or import of such Research Tool might infringe the patent or other intellectual property rights of a third party; or (ii) to for-profit third parties if Licensee can reasonably demonstrate that such Research Tool may be materially detrimental to a non-Research Tool it is currently developing and/or commercializing under this Agreement.

c. Licensee shall keep TSRI generally informed as to Licensee's progress in such research, development, regulatory approval, marketing, production and sale, including its efforts, if any, to sublicense Licensed Patent Rights, and Licensee shall deliver to TSRI an annual written report of such efforts by June 30th of each calendar year and such other reports of such efforts as TSRI may reasonably request. In these annual reports, Licensee shall describe its progress in complying with the Commercial Development Plan and in achieving the Benchmarks and shall explain in detail the reasons for any variances thereof. Licensee shall also report in writing to TSRI the dates when it has achieved the Benchmarks and the date of first commercial sale of a Licensed Product or Licensed Process in each country within thirty (30) days of such occurrences. The contents of Licensee's progress reports to TSRI shall be deemed to be Licensee's Confidential Information. Licensee may amend its Commercial Development Plan and/or the Benchmarks upon TSRI's prior written consent, which will not be unreasonably withheld if such proposed amendment is supported by a detailed showing by Licensee or its Affiliates or its Sublicensees using its best efforts and due diligence in its performance of research and development of one or more Licensed Products and Licensed Processes.

d. Any time after the Initial Development Period (or such later time as agreed in writing by TSRI and Licensee), in the event (i) TSRI has a reasonable basis to believe, based on Licensee's reports to TSRI, that Licensee is not using commercially reasonable efforts and due diligence as required under Sections 6.1 and 6.2.a, or (ii) Licensee has not achieved the Benchmarks within the time provided in Exhibit C (as may be amended as provided above), TSRI has the right to terminate this Agreement by providing written notice to Licensee, where any such right to terminate shall be subject to a [***] cure period by Licensee. Failure to meet any of the Benchmarks within the time provided in Exhibit C (as may be amended as

provided above) shall not constitute a breach by Licensee of this Agreement, but shall entitle TSRI, at TSRI's sole discretion, to terminate this Agreement as provided above or convert the licenses granted under Sections 2.1-2.3 to a non-exclusive license upon delivery of written notice to Licensee. Notwithstanding the foregoing, at any time after the initial one-year period of development under a Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan), in the event TSRI has a reasonable basis to believe that Licensee is not using commercially reasonable efforts and due diligence as required as required under Section 6.2.b, TSRI has the right to convert, subject to a [***] day cure period, the license granted under Section 2.4 in connection with such Licensed Patent Rights to a non-exclusive license upon delivery of written notice to Licensee.

6.3 Reports on Revenues and Payments. Licensee shall submit to TSRI at the time payment is due after the end of each calendar quarter, on a country-by-country and per Licensed Product and Licensed Process basis, a royalty report (the "**Royalty Report**") setting forth for such quarter:

a. the number of units of Licensed Products sold by Licensee, its Affiliates and each of its Sublicensees;

b. the gross amount due or invoiced for such Licensed Products by Licensee, its Affiliates and each of its Sublicensees;

c. the gross amounts due or invoiced for all Licensed Processes performed by Licensee, its Affiliates and each of its Sublicensees;

d. a detailed listing of any offsets under Section 3.5 and deductions used to determine Net Sales of Licensed Products and Licensed Processes pursuant to Section 1.8, and calculations on Combination Products under Section 3.6;

e. the amount of royalty due under Section 3, or if no royalties are due to TSRI for any reporting period, the statement that no royalties are due and an explanation why they are not due for that quarterly period;

f. the amount of Sublicense Revenues received by Licensee; and

g. the amount of Sublicense Payments due under Section 4.1, or if no Sublicense Payments are due to TSRI for any reporting period, the statement that no Sublicense Payments are due and an explanation why they are not due for that quarterly period.

Such Royalty Report shall be certified as correct by an officer of Licensee. The contents of such Royalty Reports shall be deemed to be Licensee's Confidential Information.

6.4 Royalty Payments. Licensee agrees to pay and shall pay to TSRI with each Royalty Report the amount of royalty and/or Sublicense Payments due with respect to such quarter. If multiple technologies are covered by the licenses granted hereunder, Licensee shall

specify which Licensed Patent Rights and Licensed Biological Materials are utilized for each Licensed Product or Licensed Process included in the Royalty Report. All payments due hereunder shall be deemed received when funds are credited to TSRI's bank account and shall be payable by check or wire transfer in United States Dollars.

6.5 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to TSRI in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the country where the sale was made on which the royalty was based to the credit and account of TSRI or its nominee in any commercial bank or trust company of TSRI's choice located in that country, prompt written notice of which shall be given by Licensee to TSRI.

6.6 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for any royalties or other amounts due hereunder or for the accounts of TSRI shall be promptly paid by Licensee for and on behalf of TSRI to the appropriate governmental authority, and Licensee shall furnish TSRI with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government authority. Any such tax actually paid on TSRI's behalf shall be deducted from royalty payments due TSRI.

7. Record Keeping. Licensee shall keep, and shall require its Affiliates and Sublicensees to keep, accurate records (together with supporting documentation) of sales of Licensed Products and Licensed Processes as appropriate to determine the amount of royalties, Sublicense Payments, Product Development Milestone Payments and other monies due to TSRI hereunder, as well as records regarding the calculations of royalty offsets and Combination Products. Such records shall be retained for at least five (5) years following the end of the reporting period to which such records relate. Such records shall be available during normal business hours for examination and copying by an independent certified public accounting firm selected by TSRI and reasonably acceptable to Licensee for the purpose of verifying that Licensee's reports and payments are accurate and that Licensee is in compliance with this Agreement. In conducting such examinations pursuant to this Section 7, TSRI's accountant shall have access to, and may disclose to TSRI, all records which TSRI reasonably believes to be relevant to the calculation of royalties under Section 3, non-royalty revenues under Section 4 and Licensee's compliance with this Agreement. Such examination shall be at TSRI's expense, except that if such examination shows an underreporting or underpayment of [***] or more for any twelve (12) month period, then Licensee shall pay the cost of such examination (including without limitation TSRI's attorney's fees, accountants fees and other costs), as well as any additional payments that would have been payable to TSRI under this Agreement had Licensee reported correctly, plus interest on such sum at the rate of [***] per month. All payments due hereunder shall be made within thirty (30) days of Licensee's receipt of a copy of the audit report. TSRI may exercise its audit rights under this Section 7 no more frequently than once in any calendar year.

8. Patent Matters.

8.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 8 shall control the prosecution of any patent application and maintenance of any patent included within Licensed Patent Rights. TSRI shall (a) direct and control the preparation, filing and prosecution of the United States and foreign patent applications within Licensed Patent Rights (including without limitation any reissues, reexaminations, appeals to appropriate patent offices and/or courts, interferences and foreign oppositions); and (b) maintain the patents issuing therefrom. TSRI shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties agree that TSRI shall have the right, at its sole discretion, to utilize TSRI's Office of Patent Counsel in lieu of or in addition to independent counsel for patent prosecution and maintenance described herein, and the fees and expenses associated with the work done by such Office of Patent Counsel and/or independent patent counsel with regard to the preparation, filing and prosecution of patent applications and maintenance of patents included within Licensed Patent Rights shall be paid as set forth below. Licensee shall have full rights of consultation with the patent attorney so selected on all matters relating to Licensed Patent Rights. TSRI shall use its reasonable efforts to implement all reasonable and timely requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Licensed Patent Rights.

8.2 Information to Licensee. TSRI shall keep Licensee timely informed with regard to the patent application and maintenance processes. TSRI shall deliver to Licensee copies of all patent applications, amendments, related correspondence, and other related matters in a timely manner.

8.3 Patent Costs. Licensee acknowledges and agrees that the licenses granted hereunder are in partial consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee agrees to pay and shall pay for all expenses referenced in Sections 8.1 and 8.2 hereof. In addition, Licensee agrees to reimburse and shall reimburse TSRI for all patent costs and expenses previously paid or associated with Licensed Patent Rights incurred by TSRI up to the Effective Date, less any such patent costs and expenses previously reimbursed by Licensee under the Option Agreement. Licensee agrees to pay and shall pay all such past and future patent expenses associated with the work on the Licensed Patent Rights performed by TSRI's Office of Patent Counsel and/or its independent counsel within thirty (30) days after Licensee receives an itemized invoice therefor. Failure of Licensee to pay patent costs and expenses as set forth in this Section 8.3 shall immediately relieve TSRI from its obligation to incur any further patent costs and expenses. For the avoidance of doubt, should Licensee not pay any patent costs and expenses due to TSRI or independent counsel within thirty (30) days after Licensee's receipt of any itemized invoice therefor, TSRI shall have the right, at its sole discretion, to cease all patent prosecution and allow Licensed Patent Rights to go abandoned. Such action by TSRI shall not constitute a breach of this Agreement. Payment can be made directly to independent counsel, or to TSRI. Licensee may elect with a minimum of ninety (90) days' prior written notice to TSRI, to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Licensed Patent

Rights. Licensee shall remain liable for all patent prosecution and maintenance costs incurred prior to the date of notice of election and for a ninety (90) day period following the date of such notice. Any such patent application or patent so elected shall immediately be excluded from the definition of Licensed Patent Rights and from the scope of the licenses granted under this Agreement, and all rights relating thereto shall revert to TSRI and may be freely licensed by TSRI.

8.4 Ownership. The patent applications filed and the patents obtained by TSRI pursuant to Section 8.1 hereof shall be owned solely by TSRI, assigned solely to TSRI and deemed a part of Licensed Patent Rights.

8.5 TSRI Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Licensed Patent Rights are terminated in accordance with the terms of this Agreement, TSRI shall have the right to take whatever action TSRI deems appropriate to obtain or maintain the corresponding patent protection. If TSRI pursues patents under this Section 8.5, Licensee agrees to use commercially reasonable efforts to cooperate fully, including by providing, at no charge to, all appropriate technical data and executing all necessary legal documents.

8.6 Infringement Actions.

8.6.1 Prosecution of Infringements.

a. Each party agrees to provide written notice to the other party promptly after becoming aware of any infringement of the Licensed Patent Rights by a third party and of any available evidence thereof. After receiving notice from the other party of a possible infringement of the Licensed Patent Rights by a third party, the parties will consult with each other about whether and to what extent such third party's products or activities are infringing upon the Licensed Patent Rights, and the extent to which the infringing products or activities are damaging sales of Licensed Products. Within ninety (90) days of such notice, Licensee shall notify TSRI of its decision and proposed course of action, where the date of Licensee's notice to TSRI, or the expiration of the ninety (90) day period, shall be known as the "**Commencement Date**". If Licensee determines, in its reasonable commercial discretion, and provides TSRI with its assessment supporting such determination, that the prosecution of such infringement would be commercially unreasonable, and TSRI does not object to such determination, then Licensee shall not have the obligation as set forth under Section 8.6.1(d) to prosecute such infringement and the consequences in Section 8.6.1(d) shall not apply; *provided, however*, that TSRI shall then have the right, but not the obligation, to prosecute such infringement.

b. In the event Licensee is obligated to, pursuant to Section 8.6.1(d) below, or elects to, pursuant to 8.6.1(a) above, pursue a third party infringer, then Licensee may enter into settlements, stipulated judgments or other arrangements respecting such infringement, at its own expense, but only with TSRI's prior written consent, which will not be unreasonably withheld or delayed. TSRI shall permit any action to be brought in its name if required by law, and Licensee shall hold TSRI harmless from any costs, expenses or liability

respecting all such infringements. TSRI agrees to provide reasonable assistance which Licensee may require in any litigation arising in accordance with the provisions of this Section 8.6.1, for which Licensee shall pay to TSRI a reasonable hourly rate of compensation, including, without limitation, joining such action as a party plaintiff if necessary or desirable for initiation or continuation of such action; *provided* that the Licensee reimburses TSRI promptly for any reasonable costs and expenses incurred by TSRI in connection with providing such assistance.

c. In the event Licensee is not obligated to, pursuant to Section 8.6.1(d) below, pursue a third party infringer, then Licensee shall notify TSRI in writing promptly and TSRI shall have the right, but not the obligation, to prosecute such infringement on its own behalf. If TSRI prosecutes such infringement, then TSRI may, at its discretion, convert the licenses granted to Licensee with respect to the patent(s) at issue to a non-exclusive license. Conversion by TSRI pursuant to this Section 8.6.1(c) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of TSRI's prosecution of such infringement.

d. Notwithstanding the foregoing Sections 8.6.l(b)-8.6.1(c), in order to maintain the licenses granted hereunder in force, Licensee shall have the first right and obligation to prosecute any and all third party infringements. Unless Licensee and TSRI otherwise agree, pursuant to Section 8.6.1(a), that the prosecution of any third party infringement is commercially unreasonable, failure on the part of Licensee to prosecute any third party infringement within six (6) months after the Commencement Dale shall be grounds for termination of the licenses granted to Licensee with respect to the patent(s) at issue, and such patent(s) shall thereafter be excluded from the definition of Licensed Patent Rights. Termination by TSRI pursuant to this Section 8.6.1(d) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of Licensee's failure to prosecute such infringement.

8.6.2 Allocation of Recovery. Any damages, settlements or other recovery from an infringement action undertaken by Licensee pursuant to Section 8.6.1 shall first be used to reimburse the parties for the costs and expenses incurred in such action, and shall thereafter be allocated between the parties as follows: (i) [***] to TSRI, (ii) and [***] to Licensee. If Licensee fails to prosecute any such action to completion or if TSRI prosecutes any such action, then any damages, settlements, or other recovery, net of the parties' costs and expenses incurred in such infringement action shall [***].

8.6.3 Defense of Infringements. Licensee shall have the first right, but not the obligation, to defend any suits against Licensee, Affiliates or Sublicensees alleging infringement of any third party intellectual property right due to Licensee's use of the Licensed Patent Rights or its development or commercialization of Licensed Products or Licensed Processes. Licensee shall promptly notify TSRI in writing of such claims, and TSRI and Licensee shall confer with each other and cooperate during the defense of any such action. If Licensee finds it necessary or desirable for TSRI to become a party to such action, TSRI shall execute all papers as may reasonably be necessary to add TSRI as a party to such action. Licensee shall bear all costs and expenses associated with any such suit or action. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate

in any such action. In no event shall TSRI have any out-of-pocket liability for costs of litigation or royalties, damages and/or settlement amounts due to any third party (except for costs of its own counsel as provided above). If the third party intellectual property right is held not to be infringed, unenforceable or invalid, any recovery of damages for such suit shall be applied first [***] shall be entitled to keep the balance remaining from any such recovery. For the purpose of clarity, it is acknowledged that this Section 8.6.3 shall in no way limit Licensee's obligations

under Section 9.1 to indemnify, defend and hold harmless TSRI with respect to third party claims alleging infringement of such third party's intellectual property rights.

8.6.4 Declaratory Judgment Actions. If a declaratory judgment action is brought naming TSRI or Licensee or any of its Affiliates or Sublicensees as a defendant and alleging invalidity, unenforceability or non-infringement of any Licensed Patent Rights, Licensee or TSRI, as the case may be, shall promptly notify the other party in writing and Licensee may elect, upon written notice to TSRI within twenty (20) days after receiving or giving notice of the commencement of such action, to take over the sole control of such action at its own expense. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate in any such action. If Licensee does not defend any such action, then TSRI shall have the right, but shall not be obligated, to defend such action at TSRI's expense.

9. Indemnity and Insurance.

9.1 Indemnity. Licensee hereby agrees to indemnify, defend (by counsel reasonably acceptable to TSRI) and hold harmless TSRI and any parent, subsidiary or other affiliated entity of TSRI and their trustees, directors, officers, employees, scientists, agents, successors, assigns and other representatives (collectively, the "**Indemnitees**") from and against all claims, suits, actions, damages, liabilities, losses and other expenses, including without limitation reasonable attorney's fees, expert witness fees and costs incurred by the Indemnitees, with respect to any third party claim [***] (collectively "**Claim**"), that arises out of or relates to (a) [***], (b) [***], (c) [***], (d) [***], (e) [***], and/or (f) Licensee's or any Sublicensee's failure to comply with any applicable laws, rules or regulations, except that [***]. Licensee's obligation to defend such Claims shall apply to any third party allegations or disputes that arise out of or relate to any of the items described in subparagraphs (a) through (f) above. Licensee shall not enter into any settlement of such Claims that imposes any obligation on TSRI, that does not unconditionally release TSRI from all liability or that would have a material adverse effect on TSRI's reputation or business without TSRI's prior written consent. Notwithstanding the above, Indemnitees, at their expense, shall have the right to retain separate independent counsel to assist in defending any such Claims. In the event Licensee fails to promptly indemnify and defend such Claims and/or pay Indemnitees' expenses as provided above, Indemnitees shall have the right to defend themselves, and in that case, Licensee shall reimburse Indemnitees for all of their reasonable attorney's fees, costs and damages incurred in settling or defending such Claims within thirty (30) days of each of Indemnitees' written requests. This indemnity shall be a direct payment obligation and not merely a reimbursement obligation of Licensee to Indemnitees.

9.2 Insurance. Licensee shall name TSRI and Indemnitees as additional insured parties on any commercial general liability and product liability insurance policies maintained by Licensee, its Affiliates, and Sublicensees applicable to the Licensed Products, Licensed Processes and Licensed Biological Materials.

9.2.1 Beginning at the time any such Licensed Product or Licensed Process is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by Licensee or by a Sublicensee, Licensee shall, at its sole cost and expense, procure

and maintain commercial general liability insurance and product liability insurance in amounts and on terms consistent with industry standards for similarly situated pharmaceutical companies commercializing products, but in no case will such insurance be less than $3,000,000 per incident and $5,000,000 annual aggregate. During clinical trials involving any Licensed Product, Licensed Process or Licensed Biological Material, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance in the same amounts and terms as specified above. Licensee's commercial general liability insurance shall provide coverage for personal injury, broad form property damage, advertising injury, premises-operations, products and completed operations and contractual liability including Licensee's indemnity and other obligations under this Agreement. Licensee may elect to self-insure all or part of the foregoing on commercially reasonable terms, which must be pre-approved by TSRI in writing; however, TSRI shall be obligated to approve such self-insurance if Licensee has and continues to maintain minimum cash reserves covering such self-insurance or minimum book equity, in either case in the amount of Five Hundred Million Dollars ($500,000,000), which Licensee sufficiently demonstrates to TSRI in writing. The insurance coverage amounts specified herein or the maintenance of such insurance policies shall not in any way limit Licensee's indemnity or other liability under this Agreement.

9.2.2 In addition, Licensee, on behalf of itself and its insurance carriers, waives any and all claims and rights of recovery against TSRI and the Indemnitees, including without limitation all rights of subrogation, with respect to either party's performance under this Agreement or for any loss of or damage to Licensee or its property or the property of others under its control. Licensee's commercial general liability insurance policy shall also include a waiver of subrogation consistent with this paragraph in favor of TSRI and the Indemnitees. Licensee shall be responsible for obtaining such waiver of subrogation from its insurance carriers. Licensee's insurance policies shall be primary and not contributory to any insurance carried by its Sublicensees or TSRI. Upon TSRI's request, Licensee shall deliver to TSRI copies of insurance certificates or binders and such waiver of subrogation that complies with the requirements of this Section 9.2.2. Licensee shall provide TSRI with written notice at least fifteen (15) days prior to the cancellation, non-renewal or material change in such insurance described in Section 9.2.1. If Licensee does not obtain replacement insurance providing comparable coverage within such fifteen (15) day period, TSRI shall have the right to terminate this Agreement for material breach under Section 12.3.

9.2.3 Licensee shall maintain such commercial general liability insurance beyond the expiration or termination of this Agreement during (a) the period that any Licensed Product or Licensed Process is being commercially distributed or sold by Licensee or by a

Sublicensee, Affiliate or agent of Licensee; and (b) a reasonable period after the period referred to in Section 9.2.3(a) above, which in no event shall be less than five (5) years.

9.3 Pre-Challenge Requirements. Licensee will provide written notice to TSRI at least [***] prior to Licensee directly or indirectly initiating a Challenge in or before any court or patent office. Licensee will include with such written notice [***] to enable the parties to attempt in good faith to mutually resolve such issues.

10. Limited Warranty.

10.1 Limited Warranty. TSRI hereby represents and warrants that, to the actual knowledge of TSRI, and only as of the Effective Date, (a) it is the sole and exclusive owner, appointed agent for licensing or licensee of all right, title and interest in and to the Licensed Patent Rights that exist as of the Effective Date; (b) it has the power and authority to grant the licenses provided for herein to Licensee, and that it has not earlier granted, or assumed any obligation to grant, any rights in such Licensed Patent Rights to any third party that have not been waived that would conflict with the rights granted to Licensee herein; and (c) this Agreement constitutes the legal, valid and binding obligation of TSRI, enforceable against TSRI in accordance with its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.2 Licensee hereby warrants and represents this Agreement constitutes the legal, valid and binding obligation of Licensee, enforceable against Licensee in accordance with its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.3 Disclaimer. EXCEPT AS PROVIDED IN SECTION 10.1, TSRI MAKES NO OTHER WARRANTIES CONCERNING LICENSED PATENT RIGHTS, LICENSED BIOLOGICAL MATERIALS OR ANY OTHER MATTER WHATSOEVER, INCLUDING WITHOUT LIMITATION ANY EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS OR ARISING OUT OF COURSE OF CONDUCT OR TRADE CUSTOM OR USAGE, AND DISCLAIMS ALL SUCH EXPRESS OR IMPLIED WARRANTIES. TSRI MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF LICENSED PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT, LICENSED PROCESS OR LICENSED BIOLOGICAL MATERIAL WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING UPON ANY LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS COVERED BY THIS AGREEMENT. FURTHER, TSRI HAS MADE NO INVESTIGATION AND MAKES NO REPRESENTATION THAT THE LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS ARE SUITABLE FOR LICENSEE'S PURPOSES.

10.4 Limitation of Liability. IN NO EVENT SHALL EITHER PARTY BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY OR

CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION DAMAGES FOR LOSS OF PROFITS OR EXPECTED SAVINGS) ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ITS SUBJECT MATTER, EXCEPT FOR LIABILITY FOR BREACH BY SUCH PARTY OF ANY OF THE CONFIDENTIALITY PROVISIONS IN SECTION 11 AND EXCEPT FOR LICENSEE'S INDEMNITY UNDER SECTION 9.1. TSRI'S AGGREGATE LIABILITY, IF ANY, FOR ALL DAMAGES OF ANY KIND RELATING TO THIS AGREEMENT OR ITS SUBJECT MATTER SHALL NOT EXCEED THE AMOUNT PAID BY LICENSEE TO TSRI UNDER THIS AGREEMENT. THE FOREGOING EXCLUSIONS AND LIMITATIONS SHALL APPLY TO ALL CLAIMS AND ACTIONS OF ANY KIND AND ON ANY THEORY OF LIABILITY, WHETHER BASED ON CONTRACT, TORT (INCLUDING, BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY), OR ANY OTHER GROUNDS, AND REGARDLESS OF WHETHER A PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. THE PARTIES FURTHER AGREE THAT EACH WARRANTY DISCLAIMER, EXCLUSION OF DAMAGES OR OTHER LIMITATION OF LIABILITY HEREIN IS INTENDED TO BE SEVERABLE AND INDEPENDENT OF THE OTHER PROVISIONS BECAUSE THEY EACH REPRESENT SEPARATE ELEMENTS OF RISK ALLOCATION BETWEEN THE PARTIES.

11. Confidentiality and Publication.

11.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement, and for a period of five (5) years after this Agreement terminates, a party receiving Confidential Information of the other party will (a) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary information; (b) not disclose such Confidential Information to any third party without prior written consent of the other party; and (c) not use such Confidential Information for any purpose except those permitted by this Agreement. Notwithstanding the foregoing, if a party is required by law, regulation or court order to disclose Confidential Information of the other party, the party required to make such disclosure shall (i) promptly send a copy of the order or notice to the other party not later than ten (10) days before the proposed disclosure or such shorter period of time as may be reasonably practical under the circumstances; (ii) cooperate with the other party if the other party wishes to object or condition such disclosure through a protective order or otherwise; (iii) limit the extent of such disclosure to the minimum required to comply with the order or notice; and (iv) use reasonable efforts to seek confidential treatment (i.e., filing "under seal") for that disclosure. In addition, a party may disclose Confidential Information of the other party to its Affiliates and employees, to Sublicensees and potential Sublicensees (in the case of Licensee), or to other third parties who are investors or potential investors in connection with due diligence or similar investigations or in confidential financing documents, provided, in each case, that any such Affiliate, employee, Sublicensee, potential Sublicensee or other third party investor or potential investor agrees in writing to be bound by terms of confidentiality and non-use at least as stringent as those set forth in this Section 11, but with no further right to disclose or otherwise distribute TSRI's Confidential Information.

11.2 Publications. Licensee agrees that TSRI shall have the right to publish in accordance with its general policies, and that this Agreement shall not restrict, in any fashion, TSRI's right to publish.

11.3 Publicity. Except as otherwise provided herein or required by any applicable law, rule or regulation (including, without limitation, rules of the U.S. Securities and Exchange Commission and rules of any stock exchange upon which Licensee's securities may be listed), no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or under any such sublicense agreements, without the prior written approval of the other party, which approval
shall not be unreasonably withheld. Scientific publications published in accordance with Section 11.2 of this Agreement shall not be construed as publicity governed by this Section 11.3.

12. Term and Termination.

12.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the licenses granted hereunder, shall terminate upon termination of the royalty obligations as provided in Section 3.10 hereof.

12.2 Termination Upon Mutual Agreement. This Agreement may be terminated by mutual written consent of both parties.

12.3 Termination by TSRI. TSRI may terminate this Agreement as follows:

a. If Licensee does not make a payment due hereunder and fails to cure such non-payment (including the payment of interest in accordance with Section 14.2) within thirty (30) days after the date of notice in writing of such non-payment by TSRI;

b. If Licensee defaults upon its indemnification and insurance obligations under Section 9 and the default has not been remedied within thirty (30) days after the date of notice in writing of such default by TSRI;

c. As provided in Section 6.2;

d. Upon written notice to Licensee in the event of the filing of bankruptcy or the bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy or insolvency laws;

e. If Licensee is convicted of a felony relating to the development, manufacture, use, marketing, distribution or sale of Licensed Products, Licensed Processes or Licensed Biological Materials;

f. In the event Licensee brings any Challenge(s), TSRI has the right to immediately terminate this Agreement without any liability and without any opportunity to

cure by Licensee upon written notice to Licensee. In the event that Sublicensee brings any Challenge(s). Licensee agrees that it will terminate such Sublicense;

g. Except as provided in subparagraphs (a) - (f) above, if Licensee commits a material breach of any of its obligations under this Agreement and the material breach has not been remedied within ninety (90) days after the date of notice in writing of such default by TSRI.

12.4 Termination by Licensee. Licensee may terminate this Agreement by giving ninety (90) days' advance written notice of termination to TSRI.

12.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date, other than the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such expiration in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to expiration in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9, 2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.5, 12.8 and 14 shall also survive the expiration of this Agreement.

12.6 Rights Upon Termination.

12.6.1 Notwithstanding any other provision of this Agreement, upon any termination of this Agreement prior to the regularly scheduled expiration date of this Agreement, the licenses granted hereunder shall terminate and revert to TSRI. Except as otherwise provided in Section 12.7 of this Agreement with respect to work-in-progress, upon such termination, Licensee shall have no further right to develop, manufacture or market any Licensed Product, Licensed Process, or to otherwise use any Licensed Patent Rights or any Licensed Biological Materials. Upon any such termination, Licensee shall promptly return all materials, samples, documents, information, and other materials which embody or disclose Licensed Patent Rights or any Licensed Biological Materials; *provided*, *however*, that Licensee shall not be obligated to provide TSRI with proprietary information which Licensee can show that it independently developed. Any such termination shall not relieve either party from any obligations accrued to the date, of such termination, including without limitation the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such termination or as provided in Section 12.7, in each case in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to termination in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9, 2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.6, 12.8 and 14 shall also survive the termination of this Agreement.

12.6.2 Any sublicense shall, upon the delivery of written notice by Sublicensee, except those Sublicensee's in default, to TSRI prior to termination of this Agreement, survive termination of this Agreement on the same terms and conditions set forth in the applicable sublicense for a period of [***] following termination of this Agreement (the "**Temporary License Period**"); *provided*, *however*, that if such written notice is not delivered prior to

termination of this Agreement, such sublicense shall immediately terminate upon termination of this Agreement. In the event a Sublicensee provides such written notice, as a condition precedent to TSRI's obligation to grant the direct license to such Sublicensee as set forth below, such Sublicensee must pay to TSRI all past due royalties, non-royalty revenue, patent costs and all other monies owed by Licensee to TSRI under this Agreement. Upon TSRI's receipt of all such outstanding monies, TSRI shall enter into a license agreement directly with such Sublicensee (the "**New License Agreement**"). Each New License Agreement shall be subject to the same non-financial terms and conditions as those in this Agreement; *provided*, *however*, that each New License Agreement shall contain substantially the same terms and conditions regarding sublicense scope, sublicense territory, duration of sublicense grant, and diligence obligations of the Sublicensee as the sublicense agreement between such Sublicensee and Licensee. Notwithstanding the above, TSRI's obligation to enter into a New License Agreement is expressly conditioned upon each of the following: (i) Sublicensee shall agree in the New License Agreement to terms providing that in no event shall TSRI be liable to Sublicensee for any actual or alleged breach of such sublicense agreement by Licensee; (ii) TSRI shall not have any obligations to such Sublicensee other than TSRI's obligations to Licensee as set forth herein; (iii) each New License Agreement shall be subordinate and comply in all respects to the applicable provisions of this Agreement, and the financial terms of each New License Agreement, including without limitation, the running royalty rate, shall be consistent with the terms of the sublicense agreement with Licensee, but shall in no event be less than the corresponding financial terms set forth in this Agreement, including without limitation the obligation to pay minimum annual royalties and other monetary payments required to be made by Licensee to TSRI; and (iv) in no event shall TSRI be obliged to accept provisions in the New License Agreement (a) unless such provisions correspond to rights granted by Licensee to Sublicensee in conformance with this Agreement, and such provisions are not in conflict with the rights, duties and obligations accruing to Licensee under this Agreement; or (b) where such provisions are inconsistent with the legal obligations under any other sublicense agreement granted by Licensee, or by applicable federal, state or local statute or regulation. In the event Sublicensee does not comply with the provisions of this Section 12.6.2, such Sublicensee's sublicense shall immediately terminate upon expiration of the Temporary License Period. Licensee must include or specifically reference this Section 12.6.2 in each of its sublicense agreements.

12.7 Work-in-Progress. Upon any early termination of the license granted hereunder in accordance with this Agreement, Licensee shall be entitled to finish any work-in-progress and to sell any completed inventory of Licensed Products covered by such license which remain on hand as of the date of the termination, so long as Licensee sells such inventory in the normal course of business and at regular selling prices and pays to TSRI the royalties applicable to such subsequent sales in accordance with the terms and conditions as set forth in this Agreement, *provided* that no such sales shall be permitted after the expiration of six (6) months after the date of termination.

12.8 Final Royalty Report. Upon termination or expiration of this Agreement, Licensee shall submit a final report to TSRI, and any payments due TSRI and unreimbursed patent expenses invoiced by TSRI shall become immediately payable.

13. Assignment; Successors.

13.1 Assignment. Any and all assignments of this Agreement or any rights granted hereunder by Licensee without TSRI's prior written consent are void, except either party may assign this Agreement or rights granted hereunder without the other party's prior written consent (i) to an Affiliate of the assigning party; or (ii) to a successor in connection with the merger, consolidation or sale of all or substantially all of its assets to which this Agreement relates.

13.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of TSRI and Licensee. Any such successor or assignee of Licensee's interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

14. General Provisions.

14.1 Independent Contractors. The relationship between TSRI and Licensee is that of independent contractors. TSRI and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than independent contracting parties. TSRI and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

14.2 Late Payments. Late payments of any and all payments due hereunder shall be subject to a charge of [***] per month, or [***] whichever is greater.

14.3 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, performance, sale and use of any Licensed Product or Licensed Process, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Products or Licensed Processes.

14.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

14.5 No Use of Name. The use of the name "The Scripps Research Institute", "Scripps", "TSRI" or any variation thereof in connection with the advertising, distribution, sale or performance of Licensed Products or Licensed Processes is expressly prohibited. The foregoing notwithstanding, without the consent of TSRI, Licensee may state that it is licensed by TSRI under the Licensed Patent Rights and identify the inventors, their affiliation with TSRI and their relationship to Licensee, and further, Licensee may comply with disclosure requirements of all applicable laws relating to its business, including, without limitation, United Sates and state securities laws.

14.6 U.S. Manufacture. Licensee agrees to abide by the Preference for United States Industry as set forth in 37 CFR 401.14 (I), which includes Licensee's agreement that any Licensed Product or Licensed Process sold in the United States shall be manufactured substantially in the United States.

14.7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall ensure that all foreign laws affecting this Agreement or the sale of Licensed Products or Licensed Processes are fully satisfied.

14.8 Use of Biological Materials. Licensee agrees that its use of any Licensed Biological Materials shall comply with all applicable statutes, regulations, and guidelines. Licensee agrees not to use the Licensed Biological Materials for research involving human subjects or clinical trials in the United States without complying with 21 CFR 50 and 45 CFR 46. Licensee agrees not to use the Licensed Biological Materials for research involving human subjects or clinical trials outside of the United States without complying with the applicable regulations of the appropriate national control authorities.

14.9 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, including without limitation any and all Challenges, shall be settled by binding confidential arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("**AAA**"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

14.9.1 Location. The location of the arbitration shall be in the County of San Diego. TSRI and Licensee hereby irrevocably submit to the exclusive jurisdiction and venue of the American Arbitration Association arbitration panel selected by the parties and located in San Diego County, California for any dispute regarding this Agreement, including without limitation any Challenges, and to the exclusive jurisdiction and venue of the federal and state courts located in San Diego County, California for any action or proceeding to enforce an arbitration award or as otherwise provided in Section 14.9.5 below, and waive any right to contest or otherwise object to such jurisdiction or venue.

14.9.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator, and all arbitrators must have at least ten (10) years experience in mediating or arbitrating cases regarding the same or substantially similar subject matter as the dispute between Licensee and TSRI. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its

designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

14.9.3 Discovery. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

14.9.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

14.9.5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, *provided*, *however*, that no punitive damages may be awarded. No court action shall be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties. Notwithstanding anything to the contrary in this Agreement, prior to or while an arbitration proceeding is pending, either party has the right to seek and obtain injunctive and other equitable relief from a court of competent jurisdiction to enforce that party's rights hereunder.

14.9.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

14.9.7 Confidentiality. Except as set forth below, and as necessary to obtain or enforce a judgment upon any arbitration award, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws or rules or regulations of any stock exchange upon which securities are traded or listed, but will use commercially reasonable efforts to seek confidential treatment for such disclosure.

14.10 Entire Agreement; Modification. This Agreement and all of the attached Exhibits set forth the entire agreement and understanding between the parties as to the subject matter hereof, and supersede all prior or contemporaneous agreements or understandings, whether oral or written. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties.

14.11 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California without regard to its conflicts or choice of laws principles thereof.

14.12 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

14.13 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered severed from this Agreement and shall not serve to invalidate the remaining provisions thereof.
The parties shall make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

14.14 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

14.15 Name. Whenever there has been an assignment or a sublicense by Licensee as permitted by this Agreement, the term "**Licensee**" as used in this Agreement shall also include and refer to, if appropriate, such assignee or Sublicensee (to the extent of such assignment or sublicense).

14.16 Attorneys' Fees. In the event of a dispute between the parties hereto or in the event of any default hereunder, the party prevailing in the resolution of any such dispute or default shall be entitled to recover its reasonable attorneys' fees and other costs incurred in connection with resolving such dispute or default. Notwithstanding anything to the contrary herein, the parties agree that this Section 14.16 shall not apply and attorney's fees and costs shall not be awarded to either party with respect to any Challenge or any action where Licensee alleges that it is not required to comply with or perform some or all of the provisions of this Agreement based upon a good faith claim that any of the Licensed Patent Rights are invalid or unenforceable. TSRI and Licensee each represent that it has been represented by its own counsel in the negotiation and execution of this Agreement. Each party further represents that it has relied solely on the advice and representation of its respective counsel in agreeing to this Section 14.16 and all of the other provisions of this Agreement.

14.17 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by facsimile machine, charges prepaid, or by overnight courier, postage prepaid and

shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

| | |
|---|---|
| For TSRI: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-9<br>La Jolla, California 92037<br>Attention: Vice President, Business Development<br>Fax No.: (858) 784-9910 |
| with a copy to: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-8<br>La Jolla, California 92037<br>Attention: Chief Business Counsel<br>Fax No.: (858) 784-9399 |
| For Licensee: | Fate Therapeutics, Inc.<br>10931 North Torrey Pines Road, Suite 107<br><br>La Jolla, CA 92037<br>Attention: Chief Financial Officer<br>Fax No.: (858) 875-1843 |
| With a copy to: | Goodwin Procter LLP<br>Exchange Place<br>Boston, MA 02109<br>Attn: Kingsley L. Taft, Esq.<br>Telephone: (617)570-1000<br>Facsimile: (617) 523-1231 |

Notices shall be deemed delivered upon the earlier of (a) when received; (b) three (3) days after deposit into the U.S. mail; (c) the date notice is sent via telefax, telex or cable; or (d) the day immediately following delivery to an overnight courier guaranteeing next-day delivery (except Sunday and holidays).

14.18 Compliance with U.S. Laws. Nothing contained in this Agreement shall require or permit TSRI or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

**IN WITNESS WHEREOF**, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

| TSRI: | LICENSEE: |
| --- | --- |
| THE SCRIPPS RESEARCH INSTITUTE | FATE THERAPEUTICS, INC. |
| By: /s/ Thomas E. Northrup Ph.d., J.D. | By: /s/ J. Scott Wolchko |
| Title: Chief Business Counsel, The Scripps Research Institute | Title: CFO |

**Exhibit A**

LICENSED BIOLOGICAL MATERIALS

[***]

**Exhibit B**

LICENSED PATENT RIGHTS

[***]

**Exhibit C**

LICENSEE'S COMMERCIAL DEVELOPMENT PLAN
(including Benchmarks)

| Benchmark | Timeline |
|---|---|
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |

Notwithstanding anything to the contrary in the Agreement, in the event that Licensee is unable to achieve a given Benchmark according to its applicable timeline, Licensee may, on a one-time only basis under the Agreement, extend the timeline by [***] by making a [***] payment to TSRI (where, for the avoidance of doubt, all later occurring Benchmark(s) shall also be similarly extended by [***].

**Exhibit D**

INFORMATION AND MATERIALS

TSRI and Licensee shall add items to this Exhibit D upon mutual agreement.

**Exhibit 10.21**

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED (INDICATED BY: [***]) FROM THE EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY EXPOSED.

# LICENSE AGREEMENT

**by and between**

**THE SCRIPPS RESEARCH INSTITUTE,**
**a California nonprofit**
**public benefit corporation**

**and**

**FATE THERAPEUTICS, INC.**
**a Delaware corporation**

# LICENSE AGREEMENT

This License Agreement is entered into and made effective as of this 25th day of May, 2010 (the "**Effective Date**"), by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("**TSRI**"), and Fate Therapeutics, Inc., a Delaware corporation ("**Licensee**"), each located at the respective address set forth in Section 14.17 below, with respect to the facts set forth below.

## RECITALS

A. TSRI is the owner of certain Licensed Patent Rights and has the right to grant licenses under such Licensed Patent Rights, subject to the rights set forth in Sections 2.8 and 2.9 of this Agreement.

B. TSRI desires to have the Licensed Patent Rights developed and commercialized to benefit the public and is willing to grant a license thereunder to Licensee.

C. Licensee desires to obtain a license under the Licensed Patent Rights and to use the Licensed Biological Materials pursuant to the terms and conditions set forth herein.

**NOW**, **THEREFORE**, in consideration of the mutual covenants and conditions set forth herein, TSRI and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth herein.

1.1 Affiliate. The term "**Affiliate**" shall mean any entity which directly or indirectly controls, or is controlled by, or is under common control with, Licensee. The term "control" as used herein means (a) in the case of corporate entities, direct or indirect ownership of at least fifty percent (50%) of the stock or shares entitled to vote for the election of directors or with the power to direct the management and policies of such corporate entities; or (b) in the case of non-corporate entities, direct or indirect ownership of at least fifty percent (50%) of the equity interests with the power to direct the management and policies of such non-corporate entities. All Affiliates shall be deemed to be licensees under Section 2.1-2.4 of this Agreement.

1.2 Confidential Information. The term "**Confidential Information**" shall mean any and all proprietary or confidential information of TSRI or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Confidential Information shall also include any information which, given the circumstances surrounding disclosure, would be considered confidential by the disclosing party. Information shall not be considered confidential to the extent that either party can establish by competent proof that it:

a. Is publicly disclosed through no fault of the receiving party, either before or after it becomes known to the receiving party; or

b. Was known to the receiving party without obligation of confidentiality prior to the date of this Agreement, which knowledge was acquired

independently and not from the disclosing party (including such party's employees, consultants or agents); or

c. Is subsequently disclosed to the receiving party without obligation of confidentiality in good faith by a third party who is not under any obligation to maintain the confidentiality of such information, and without breach of this Agreement by a receiving party; or

d. Has been published by a third party not in breach of any obligation of confidentiality; or

e. Was independently developed by the receiving party without the use of or reliance on the Confidential Information of the disclosing party.

If Confidential Information is required to be disclosed by the receiving party by law or court order, the party required to make such disclosure shall limit the same to the minimum required to comply with the law or court order, and shall use reasonable efforts to attempt to seek confidential treatment for that disclosure, and prior to making such disclosure by the receiving party shall notify the other party, not later than ten (10) days (or such shorter period of time as may be reasonably practicable under the circumstances) before the disclosure in order to allow that other party to comment and/or to obtain a protective or other order, including extensions of time and the like, with respect to such disclosure.

1.3 Field. The term "**Field**" shall mean all fields.

1.4 Licensed Biological Materials. The term "**Licensed Biological Materials**" shall mean the materials identified in Exhibit A and supplied by TSRI to Licensee, together with any progeny or mutants of such materials, or unmodified derivatives of such materials (defined as substances created by Licensee that constitute an unmodified functional sub-unit or product expressed by such materials).

1.5 Licensed Patent Rights. The term "**Licensed Patent Rights**" shall mean rights arising out of or resulting from (a) the U.S./PCT Patent Application(s) set forth on Exhibit B; (b) the foreign patent applications associated with the application(s) referenced in sub clause (a) above; (c) the patents issued from the application(s) referenced in sub clauses (a) and (b), and in sub clauses (d) and (e) below; (d) divisionals, continuations, reissues, reexaminations, renewals, and extensions of any patent or application set forth in sub clauses (a)-(c) above; and (e) all claims of continuations-in-part that are entitled to the benefit of the priority date of the application(s) referenced in sub clause (a) above.

1.6 Licensed Product. The term "**Licensed Product**" shall mean any product (a) the manufacture, use, importation, sale or offer for sale of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights, or (b) that is comprised of, utilizes or incorporates Licensed Biological Materials, or (c) that is discovered, developed or made using a Licensed Process.

1.7 Licensed Process. The term "**Licensed Process**" shall mean any method or process (a) claimed in a Valid Claim of any of the Licensed Patent Rights, (b) the practice of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights, or (c) that utilizes or incorporates Licensed Biological Materials.

1.8 Net Sales. The term "**Net Sales**" shall mean the gross amount invoiced by Licensee and its Affiliates or its Sublicensees, or any of them, on all sales of Licensed Products and Licensed Processes, less (a) discounts actually allowed; (b) credits for claims, allowances, retroactive price reductions or returned or rejected goods; (c) amounts invoiced and actually paid for third party transportation, insurance or shipping charges to an end user of the Licensed Product or Licensed Process; (d) any taxes or other governmental charges actually paid in connection with the sale, transportation, or delivery of Licensed Products or Licensed Processes (but excluding what are commonly known as income taxes and value-added taxes). Net Sales shall include all consideration invoiced by Licensee, its Affiliates or its Sublicensees in exchange for any Licensed Products or Licensed Processes including without limitation any monetary payments or, with regard to any other property paid in exchange for any Licensed Products or Licensed Processes, an amount in cash equal to the fair market value of such property. For purposes of determining Net Sales, a sale shall be deemed to have occurred when an invoice therefore is generated, the Licensed Product shipped for delivery or the Licensed Process completed or provided. Sales of Licensed Products or Licensed Processes by and amongst Licensee, its Affiliates or Sublicensees shall be excluded, unless the Affiliates or Sublicensees consume the Licensed Products or Licensed Processes, and only the subsequent sale of such Licensed Products or Licensed Processes to unrelated parties shall be deemed Net Sales hereunder.

1.9 [***]

1.10 Research Tool. The term "**Research Tool**" shall mean a Licensed Product, Licensed Process or Licensed Biological Material that is designed and developed solely for use in performing basic research including, without limitation, basic research having as its primary purpose understanding the biology or pathology of cells or cell lines and diseases or disorders affecting them, or education purposes, and not for Commercial Drug Development purposes. "**Commercial Drug Development**" includes the following activities: (a) any human clinical use or veterinary use (including, without limitation, therapeutic, prophylactic or diagnostic use); (b) any screening of compound libraries; (c) any development, manufacture or provision of any commercial pharmaceutical, healthcare or consumer products, processes or services; or (d) any provision of services related to the above (a)-(c).

1.11 Sublicensee. The term "**Sublicensee**" shall mean any third party (other than an Affiliate) to whom Licensee grants a sublicense with respect to the rights conferred upon Licensee under this Agreement, as contemplated by Section 2.6.

1.12 Valid Claim. The term "**Valid Claim**" shall mean a claim of any issued and unexpired patent within the Licensed Patent Rights which has not been revoked or held unenforceable, unpatentable or invalid by a decision of a court or governmental body of

competent jurisdiction in a ruling that is unappealed or unappealable, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise. The term "**Valid Claim**" shall also include the claims of a pending patent application within the Licensed Patent Rights which have not been (i) cancelled, withdrawn, abandoned or finally disallowed without the possibility of appeal or refilling of such application, or (ii) pending for a period of more than [***] from the date of the first examination of the patent application.

2. Grant of License.

2.1 Grant of Exclusive License for Licensed Products. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights, including, without limitation, to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported Licensed Products in the Field.

2.1a. Pfizer Research License. The license rights granted by TSRI to Licensee under this agreement are subject to the non-exclusive license rights granted to Pfizer pursuant to the Pfizer Research License.

2.2 Grant of Exclusive License for Licensed Processes. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights to make and have made, to use and have used, to practice and have practiced, to offer to sell and have offered for sale, to sell and have sold, and to import and have imported any Licensed Processes in the Field.

2.3 Grant of Exclusive License for Licensed Biological Materials. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, to the Licensed Biological Materials to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported, and to transfer and distribute any Licensed Biological Materials in the Field.

2.4 Research Tools.

a. For clarity, Research Tools are subject to the license grants in Sections 2.1-2.3, Section 2.8, the retained rights set forth in Sections 2.9, and the due diligence requirements in Section 6.

b. If TSRI reasonably believes that a Licensed Product, Licensed Process or Licensed Biological Material should be classified as a Research Tool hereunder, [***]. If the Parties are unable to reach agreement regarding the classification within [***] after receipt of such notice, either party may request resolution of such issue in accordance with the dispute resolution process set forth in Section 14.9 (and, during

any such process, such Licensed Product, Licensed Process or Licensed Biological Material shall not be classified as a Research Tool under this Agreement).

c. If such item is ultimately classified as a Research Tool as provided above, then Licensee shall comply with the due diligence obligations set forth in Section 6.2.b.

2.5 Covenants Not To Grant Third Party Licenses. As of the Effective Date and until this Agreement is terminated, TSRI covenants not (i) to grant to any third party any licenses or any rights to Licensed Patent Rights in the Field, or (ii) to grant to any third party any licenses or any rights to, or to transfer samples of, Licensed Biological Materials in the Field, except as permitted under Sections 2.8 and 2.9 hereof.

2.6 Sublicensing. Licensee shall have the right to grant and authorize sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement. Sublicensees shall not have the right to further sublicense without TSRI's prior written consent, which will not be unreasonably withheld or delayed. Any sublicense granted under this Section 2.6 shall be subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement (including the provisions regarding governmental interest, reservation of rights, development efforts, reporting, audit rights, indemnity, insurance, limited warranty, disclaimer, limitation of liability, confidentiality, and rights upon expiration or termination). It is anticipated that Licensee may enter into agreements with third parties wherein some of the rights granted herein will be transferred to third parties who are performing a service for Licensee, such as a contract manufacturer or contract research organization, but specifically excluding agreements that contain the rights to sell, or offer for sale Licensed Products or Licensed Processes. These types of service agreements are not subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement but shall include the following provisions contained herein: indemnity, insurance, limited warranty, disclaimer, limitation of liability, and confidentiality. In the event of a conflict between this Agreement and the terms of any sublicense, the terms of this Agreement shall control. Licensee shall forward to TSRI a copy of any and all fully executed sublicense and service agreements within thirty (30) days of execution.

2.7 No Other License. This Agreement confers no license or rights by implication, estoppel, or otherwise under any patent applications or patents or other intellectual property of TSRI other than Licensed Patent Rights regardless of whether such patents or intellectual property are dominant or subordinate to Licensed Patent Rights.

2.8 Governmental Interest. Licensee and TSRI acknowledge that TSRI has received, and expects to continue to receive, funding from the United States Government in support of TSRI's research activities. Licensee and TSRI acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to the rights of the United States Government, existing and as amended, which may arise or result from TSRI's receipt of research support from the United States Government, including but not limited to, 37

CFR 401, the NIH Grants Policy Statement and the NIH Guidelines for Obtaining and Disseminating Biomedical Research Resources.

2.9 Reservation of Rights. TSRI reserves the right to use for any internal basic research or educational purposes any Licensed Patent Rights and Licensed Biological Materials licensed hereunder, without TSRI being obligated to pay Licensee any royalties or other compensation or to account to Licensee in any way. During the term, including any extension thereof, of the Research Funding and Option Agreement dated February 19, 2008 between Licensee and TSRI ("**Research Agreement**"), TSRI will not enter into any agreements with any other third party for the performance of sponsored research in the same field of research described in Appendix A of such Research Agreement.

In addition, TSRI reserves the right to grant non-exclusive licenses to use the Licensed Patent Rights and Licensed Biological Materials for internal basic research and educational purposes to other nonprofit or academic institutions, and in no event for any Commercial Drug Development activities. TSRI may distribute Licensed Biological Materials to other nonprofit or academic institutions (but in no event to any for-profit third party) for the uses expressly permitted above, under the terms of a Material Transfer Agreement with such institution (an "**MTA**"). Licensee may request on an annual basis a list of the parties with whom TSRI has entered into an MTA for Licensed Patent Rights and Licensed Biological Materials, and TSRI shall provide such list within thirty (30) days of its receipt of such request by Licensee.

2.10 Know-how License. TSRI grants to Licensee a non-exclusive license to utilize the information, and materials listed on Exhibit D in the exploitation of the Licensed Patent Rights.

3. Royalties.

3.1 License Issue Fee. Licensee agrees to pay and shall pay to TSRI a noncreditable, nonrefundable license issue fee in the amount of Ten Thousand U.S. Dollars (U.S. $10,000) within fifteen (15) days of the Effective Date (the "**License Issue Fee**"). Failure of Licensee to make this payment shall render this Agreement null and void (ab initio).

3.2 Minimum Annual Royalty. Licensee agrees to pay and shall pay to TSRI a nonrefundable minimum annual royalty in the amount of [***]. The first payment is due no later than January 1, 2011 and on January 1st of each subsequent calendar year until the first January 1 after the first commercial sale of the first Licensed Product by Licensee or any of its Sublicensees, at which time the amount of the minimum annual royalty shall become and shall remain [***] (the "**Minimum Annual Royalty Fee**"). Such payments shall be credited against running royalties due for that calendar year and Licensee's royalty reports shall reflect such a credit. Such payments shall not be credited against milestone payments (if any), Sublicensing Payments (if any), nor against royalties due for any preceding or subsequent calendar year.

3.3 Running Royalties. Licensee agrees to pay and shall pay to TSRI a running royalty, on a country-by-country basis, in the following percentage amounts of Net Sales

of Licensed Products sold or transferred, or Licensed Processes performed, by Licensee, Affiliates or Sublicensees,

a. where such sale or transfer or performance in the applicable country then infringes one or more Valid Claims contained in the Licensed Patent Rights for such country: (i) [***]; (ii) [***]; (iii) [***]; and (iv) [***]; *provided, however*, where such sale or transfer or performance in the applicable country does not then infringe one or more Valid Claims contained in the Licensed Patent Rights for such country, the running royalty percentages as set forth above in 3.3.a(i)-(iv), as applicable, shall be reduced by [***]; and

b. where the manufacture, use or sale of such Licensed Product or Licensed Process is not covered by a Valid Claim in any country but utilizes, is comprised of or incorporates Licensed Biological Materials or was discovered, developed or made using any Licensed Process: [***] in any country.

3.4 Royalty Increase. Notwithstanding Section 3.3, in the event Licensee, an Affiliate, or a Sublicensee directly or indirectly initiates any action or proceeding in or before any court or patent office alleging that (i) any of the Licensed Patent Rights are invalid or unenforceable, or (ii) no royalties, Sublicense Payments, milestone payments, patent costs or other monies are due or required to be paid to TSRI under this Agreement because some or all of the Licensed Patent Rights are invalid or unenforceable (collectively "**Challenges**"), the royalty rates specified in Section 3.3 shall be increased to the following rates: [***]; *provided*, *however*, that such increase shall only be applied to a Licensed Product and/or a Licensed Process covered by the Licensed Patent Right(s) that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to a Licensed Product and/or a Licensed Process that is covered by Licensed Patent Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, provided that at least one (1) claim that covers such Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. Licensee (i) agrees that [***].

3.5 Royalty Credit. If Licensee, its Affiliate or its Sublicensee is required to license or acquire technology (including, but not limited to, patent rights and/or other intellectual property rights) from a third party in order to practice the Licensed Patent Rights or to develop or commercialize a Licensed Product or Licensed Process because the exploitation of the Licensed Patent Rights would infringe that third party's intellectual property rights without obtaining a license to such third party technology, [***], then Licensee may deduct up to [***] of the amount paid to such third party from the payments owing to TSRI for such Licensed Product or Licensed Process [***]. The above offset right is subject to the requirement that Licensee, its Affiliate or its Sublicensee shall not decrease the royalty or other amounts owed to TSRI under this Agreement by more than [***] of the amount due. Notwithstanding the above, Licensee, its

Affiliate or its Sublicensee shall have no right to deduct or offset any royalties or other amounts with respect to any third party technology that is the subject of any cross license or similar

arrangements (whether in the same or related transactions) where Licensee, its Affiliate or its Sublicensee grants or provides to such third party or its affiliates licenses, options or other rights to existing or future technology, intellectual property, research or development activities or other information or materials. Licensee will give TSRI advance written notice of any third party arrangement sufficiently prior to seeking to deduct any payments to the third party under the terms of this Section 3.5 in order to allow TSRI and Licensee to mutually determine whether such third party's technology is required in order to practice or exploit the Licensed Patent Rights.

3.6 Combination Products. If a Licensed Product or Licensed Process is sold in combination with another component(s), which other component(s) if sold alone would not be subject to a royalty payment hereunder, then Net Sales as applicable, from such combination sales, for purposes of calculating the amounts due under this Section 3, shall be calculated by multiplying the gross selling price of the combination product by the fraction A/(A+B), where A is the gross selling price, during the royalty period in question, of the Licensed Product or Licensed Process sold separately, and B is the gross selling price, during the royalty period in question, of the other component(s), sold separately. If the other component(s) are not sold separately during that royalty period, then the Net Sales, as applicable, on the combination product shall be as reasonably allocated between such Licensed Product and such other component(s) as mutually agreed upon by Licensee and TSRI, based on the relative value contributed by each component; *provided, however*, that the Net Sales allocated to such Licensed Product shall not be less than [***] of the Net Sales of such combination product.

3.7 Royalty Floor. In no event may the royalty owed to TSRI be reduced by more than [***]. Licensee may utilize either the Combination Products or the Royalty Credit calculation at its discretion, but may not use both.

3.8 No Multiple Royalties. No multiple royalties shall be due because any Licensed Product or Licensed Process is covered by more than one of the Licensed Patent Rights. In such case, Licensee shall pay only one royalty at the highest of the applicable rates pursuant to Section 3.3 above.

3.9 Arms-Length Transactions. On sales of Licensed Products or Licensed Processes which are made in other than an arm's-length transaction, the value of the Net Sales attributed under this Section 3 to such a transaction shall be that which would have been received in an arm's-length transaction, based on sales of like quality and quantity products, services or processes on or about the time of such transaction.

3.10 Duration of Royalty Obligations. The royalty obligations of Licensee as to each Licensed Product or Licensed Process shall continue on a country-by-country basis until (a) (i) the expiration of the last to expire of a Valid Claim that covers such Licensed Product or Licensed Process in that country, or (ii) in the countries where no Valid Claim was filed the royalty obligation shall run concurrent with the last to expire Valid Claim in the United States or

Europe, or (b) for a Licensed Product or Licensed Process not covered by a Valid Claim in any country but [***] years after the date of the first commercial sale of such Licensed Product or

Licensed Process in such country. Upon the termination of Licensee's royalty obligations with respect to a Licensed Product or Licensed Process in a country, the license grants contained in Sections 2.1.-2.3 shall become fully paid-up, royalty-free, perpetual and irrevocable for such Licensed Product or Licensed Process in such country.

3.11 Other License Agreements.

a. In the event that Licensee would be required to pay a Licensee Issue Fee under (i) any other license agreements arising from the Research Agreement or the Option Agreement dated January 5, 2009 between Licensee and TSRI ("**Option Agreement**"), entered into between Licensee and TSRI (such written agreements are collectively the "**Other License Agreements**") and (ii) Section 3.1 under this Agreement, then the maximum aggregate Licensee Issue Fee Licensee shall be required to pay under the Other License Agreements and this Agreement shall be $[***] under the applicable sections of such agreements.

b. In the event that Licensee would be required to pay a Minimum Annual Royalty Fee under (i) any Other License Agreements and (ii) Section 3.2 under this Agreement, then (x) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements; and (y) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements.

c. In the event that Licensee would, in connection with the sale or transfer of a product or service, be required to pay a royalty under (i) any Other License Agreements and (ii) Section 3.3 under this Agreement in connection with the same sale or transfer, then Licensee shall be required under the Other License Agreements and this Agreement only to pay a single royalty under such agreements in connection with such sale or transfer, such royalty to be payable at the highest of the royalties owed to TSRI under the applicable sections of such agreements.

4. Non-Royalty Revenues.

4.1 Sublicense Payments. Any and all revenues, equity interests and other consideration paid to Licensee in consideration of the grant to a third party of a sublicense to the Licensed Patent Rights and/or Licensed Biological Materials to any Sublicensee that is not an Affiliate of Licensee (collectively "**Sublicense Revenues**") shall be reported and paid to TSRI by Licensee on a quarterly basis within sixty (60) days of the end of the applicable quarter in which such Sublicense Revenues are received by Licensee. Notwithstanding the foregoing, all royalties based upon transfers or sales of Licensed Products or Licensed Processes, payments for or reimbursement for costs for research and development (to the extent itemized in the sublicense agreement), payments for or reimbursements for costs for patent prosecution, defense, enforcement and maintenance, and payments for equity and debt securities, so long as said
payments reflect the current fair market value, and not a premium thereon, shall be excluded from Sublicense Revenues. Any non-cash Sublicense Revenues received by Licensee from a Sublicensee or other third party shall be valued at its fair market value as of the date of receipt,

as determined in good faith by Licensee. Licensee shall pay to TSRI a non-creditable, nonrefundable percentage of these Sublicense Revenues according to the following schedule ("**Sublicense Payments**"):

| Sublicense Revenues received by Licensee(on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |
| $[***] | [***] |
| More than $[***] | [***] |

Any milestone payment that Licensee makes to TSRI under Section 4.4 below upon achievement of a given milestone event by a Sublicensee would be credited against any payment due under this Section 4.1 only with respect to Sublicense Revenues received in connection with achievement of the same milestone event.

To the extent that patent rights, other intellectual property rights or other rights or obligations other than Licensed Patent Rights are sublicensed or granted by Licensee, including, without limitation, pursuant to Other License Agreements, that portion of the consideration received by Licensee and subject to this Section 4.1 shall be equitably apportioned between the Licensed Patent Rights and those other rights and obligations, and such apportionment shall be reasonable and in accordance with customary standards in the industry. Licensee shall promptly deliver to TSRI a written report setting forth such apportionment. In the event TSRI disagrees with the determination made by Licensee, TSRI shall so notify Licensee within [***] of receipt of Licensee's report and the parties shall meet to discuss and resolve such disagreement in good faith. If the parties are unable to agree in good faith as to such fair market values within thirty (30) days, then the matter shall be submitted in accordance with the dispute resolution process set forth in Section 14.9.

Notwithstanding the foregoing, with respect to any sublicense agreement, the parties agree that the percentage of "**Sublicense Revenues**" attributable to such sublicense agreement is not cumulative across Other License Agreements, regardless of the number of Other License Agreements that are applicable to such sublicense agreement, and regardless of whether sublicenses are granted under more than one Other License Agreement.

4.2 Increase in Sublicense Payments. Notwithstanding Section 4.1, in the event Licensee directly or indirectly initiates a Challenge in or before any court or patent office, the percentages specified in Section 4.1 shall be increased to the following rates:

| Sublicense Revenues received by Licensee(on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |

| | |
|---|---|
| $[***] | [***] |
| More than $[***] | [***] |

*provided*, *however*, that such increase shall only be applied to Sublicense Revenues derived from the Licensed Patent Rights that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to Sublicense Revenue derived from any Licensed Patent Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, provided that at least one (1) claim that covers a Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. [***]

4.3 Product Development Milestones. Licensee agrees to pay and shall pay to TSRI the following non-creditable, non-refundable product development milestones within sixty (60) days of the end of the applicable quarter in which the first occurrence in the United States or Europe of each milestone for the first Licensed Product or first Licensed Process to meet such milestone as follows:

| Milestone | Payment |
|---|---|
| [***] | |

Each such milestone shall be payable only once under the Agreement. In the event that any Licensed Product or Licensed Process would be subject to development milestones and payments under this Section 4.3 as well as under any Other License Agreements, then it is understood and agreed that such Licensed Product or Licensed Process shall be subject to only a single schedule of development milestones and payments under this Agreement and the Other License Agreements.

5. Royalty Payments.

5.1 Sales by Licensee. Royalties payable pursuant to Section 3 herein, shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon Net Sales during the immediately preceding calendar quarter.

5.2 Sales by Sublicensees. Licensee agrees to pay and shall pay to TSRI, or cause its Sublicensees to pay to TSRI, all royalties pursuant to Section 3 herein resulting from the Net Sales of its Sublicensees, within sixty (60) days after the end of each calendar quarter, based on Net Sales during the immediately preceding calendar quarter.

6. Development and Commercialization Activities.

6.1 Commercial Development Plan. Licensee has provided to TSRI its development plan attached hereto as Exhibit C, under which Licensee intends to bring the subject matter of the Licensed Patent Rights to the point of commercial use ("**Commercial Development Plan**"), where such Commercial Development Plan is subject to the mutual

agreement by Licensee and TSRI. Pursuant to the Commercial Development Plan, Licensee shall use commercially reasonable efforts to achieve the development benchmarks specified in the Commercial Development Plan ("**Benchmarks**") within the time periods set forth in such specified in the Commercial Development Plan. Notwithstanding the foregoing, in the event that Licensee, its Affiliates or a Sublicensee, alone or together, has expended a minimum of [***] (excluding amounts paid to TSRI under the Research Funding and Option Agreement) per each calendar year during the initial [***] period of development under such Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan) ("**Initial Development Period**"), Licensee will be deemed to have complied with Licensee's obligations under this Section 6 in connection with such Commercial Development Plan for each year during such initial [***] period.

6.2 Licensee's Commercialization Activities.

a. Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence, to conduct research and achieve development of one or more Licensed Products and Licensed Processes, as promptly as is commercially feasible. Following Licensee's receipt of necessary regulatory approvals, Licensee or its Affiliates or Sublicensees shall earnestly and diligently produce and sell reasonable quantities of Licensed Products or Licensed Processes sufficient to meet market demands.

b. If a Licensed Product, Licensed Process or License Biological Material is ultimately classified as a Research Tool under Section 2.4, then Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence to distribute and make such Research Tool reasonably available to third parties on commercially reasonable terms; *provided*, *however*, that Licensee shall not be obligated to make such Research Tool available pursuant to this Section 6.2(b) to (i) third parties if Licensee reasonably believes that the manufacture, use, offer for sale, sale or import of such Research Tool might infringe the patent or other intellectual property rights of a third party; or (ii) to for-profit third parties if Licensee can reasonably demonstrate that such Research Tool may be materially detrimental to a non-Research Tool it is currently developing and/or commercializing under this Agreement.

c. Licensee shall keep TSRI generally informed as to Licensee's progress in such research, development, regulatory approval, marketing,
production and sale, including its efforts, if any, to sublicense Licensed Patent Rights, and Licensee shall deliver to TSRI an annual written report of such efforts by June 30th of each calendar year and such other reports of such efforts as TSRI may reasonably request. In these annual reports, Licensee shall describe its progress in complying with the Commercial Development Plan and in achieving the Benchmarks and shall explain in detail the reasons for any variances thereof. Licensee shall also report in writing to TSRI the dates when it has achieved the Benchmarks and the date of first commercial sale of a

Licensed Product or Licensed Process in each country within thirty (30) days of such occurrences. The contents of Licensee's progress reports to TSRI shall be deemed to be Licensee's Confidential Information. Licensee may amend its Commercial Development Plan and/or the Benchmarks upon TSRI's prior written consent, which will not be unreasonably withheld if such proposed amendment is supported by a detailed showing by Licensee or its Affiliates or its Sublicensees using its best efforts and due diligence in its performance of research and development of one or more Licensed Products and Licensed Processes.

d. Any time after the Initial Development Period (or such later time as agreed in writing by TSRI and Licensee), in the event (i) TSRI has a reasonable basis to believe, based on Licensee's reports to TSRI, that Licensee is not using commercially reasonable efforts and due diligence as required under Sections 6.1 and 6.2.a, or (ii) Licensee has not achieved the Benchmarks within the time provided in Exhibit C (as may be amended as provided above), TSRI has the right to terminate this Agreement by providing written notice to Licensee, where any such right to terminate shall be subject to a [***] cure period by Licensee. Failure to meet any of the Benchmarks within the time provided in Exhibit C (as may be amended as provided above) shall not constitute a breach by Licensee of this Agreement, but shall entitle TSRI, at TSRI's sole discretion, to terminate this Agreement as provided above or convert the licenses granted under Sections 2.1-2.3 to a non-exclusive license upon delivery of written notice to Licensee. Notwithstanding the foregoing, at any time after the initial one-year period of development under a Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan), in the event TSRI has a reasonable basis to believe that Licensee is not using commercially reasonable efforts and due diligence as required as required under Section 6.2.b, TSRI has the right to convert, subject to a [***] cure period, the license granted under Section 2.4 in connection with such Licensed Patent Rights to a non-exclusive license upon delivery of written notice to Licensee.

6.3 Reports on Revenues and Payments. Licensee shall submit to TSRI at the time payment is due after the end of each calendar quarter, on a country-by-country and per Licensed Product and Licensed Process basis, a royalty report (the "**Royalty Report**") setting forth for such quarter:

a. the number of units of Licensed Products sold by Licensee, its Affiliates and each of its Sublicensees;

b. the gross amount due or invoiced for such Licensed Products by Licensee, its Affiliates and each of its Sublicensees;

c. the gross amounts due or invoiced for all Licensed Processes performed by Licensee, its Affiliates and each of its Sublicensees;

d. a detailed listing of any offsets under Section 3.5 and deductions used to determine Net Sales of Licensed Products and Licensed Processes pursuant to Section 1.8, and calculations on Combination Products under Section 3.6;

e. the amount of royalty due under Section 3, or if no royalties are due to TSRI for any reporting period, the statement that no royalties are due and an explanation why they are not due for that quarterly period;

f. the amount of Sublicense Revenues received by Licensee; and

g. the amount of Sublicense Payments due under Section 4.1, or if no Sublicense Payments are due to TSRI for any reporting period, the statement that no Sublicense Payments are due and an explanation why they are not due for that quarterly period.

Such Royalty Report shall be certified as correct by an officer of Licensee. The contents of such Royalty Reports shall be deemed to be Licensee's Confidential Information.

6.4 Royalty Payments. Licensee agrees to pay and shall pay to TSRI with each Royalty Report the amount of royalty and/or Sublicense Payments due with respect to such quarter. If multiple technologies are covered by the licenses granted hereunder, Licensee shall specify which Licensed Patent Rights and Licensed Biological Materials are utilized for each Licensed Product or Licensed Process included in the Royalty Report. All payments due hereunder shall be deemed received when funds are credited to TSRI's bank account and shall be payable by check or wire transfer in United States Dollars.

6.5 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to TSRI in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the country where the sale was made on which the royalty was based to the credit and account of TSRI or its nominee in any commercial bank or trust company of TSRI's choice located in that country, prompt written notice of which shall be given by Licensee to TSRI.

6.6 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for any royalties or other amounts due hereunder or for the accounts

of TSRI shall be promptly paid by Licensee for and on behalf of TSRI to the appropriate governmental authority, and Licensee shall furnish TSRI with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government authority. Any such tax actually paid on TSRI's behalf shall be deducted from royalty payments due TSRI.

7. Record Keeping. Licensee shall keep, and shall require its Affiliates and Sublicensees to keep, accurate records (together with supporting documentation) of sales of Licensed Products and Licensed Processes as appropriate to determine the amount of royalties, Sublicense Payments, Product Development Milestone Payments and other monies due to TSRI hereunder, as well as records regarding the calculations of royalty offsets and Combination Products. Such records shall be retained for at least five (5) years following the end of the reporting period to which such records relate. Such records shall be available during normal business hours for examination and copying by an independent certified public accounting firm selected by TSRI and reasonably acceptable to Licensee for the purpose of verifying that Licensee's reports and payments are accurate and that Licensee is in compliance with this Agreement. In conducting such examinations pursuant to this Section 7, TSRI's accountant shall have access to, and may disclose to TSRI, all records which TSRI reasonably believes to be relevant to the calculation of royalties under Section 3, non-royalty revenues under Section 4 and Licensee's compliance with this Agreement. Such examination shall be at TSRI's expense, except that if such examination shows an underreporting or underpayment of [***] or more for any twelve (12) month period, then Licensee shall pay the cost of such examination (including without limitation TSRI's attorney's fees, accountants fees and other costs), as well as any additional payments that would have been payable to TSRI under this Agreement had Licensee reported correctly, plus interest on such sum at the rate of [***] per month. All payments due hereunder shall be made within thirty (30) days of Licensee's receipt of a copy of the audit report. TSRI may exercise its audit rights under this Section 7 no more frequently than once in any calendar year.

8. Patent Matters.

8.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 8 shall control the prosecution of any patent application and maintenance of any patent included within Licensed Patent Rights. TSRI shall (a) direct and control the preparation, filing and prosecution of the United States and foreign patent applications within Licensed Patent Rights (including without limitation any reissues, reexaminations, appeals to appropriate patent offices and/or courts, interferences and foreign oppositions); and (b) maintain the patents issuing therefrom. TSRI shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties agree that TSRI shall have the right, at its sole discretion, to utilize TSRI's Office of Patent Counsel in lieu of or in addition to independent counsel for patent prosecution and maintenance described herein, and the fees and expenses associated with the work done by such Office of Patent Counsel and/or independent patent counsel with regard to the preparation, filing and prosecution of patent applications and maintenance of patents included within Licensed Patent Rights shall be paid as set forth below. Licensee shall have full
rights of consultation with the patent attorney so selected on all matters relating to Licensed Patent Rights. TSRI shall use its reasonable efforts to implement all reasonable and timely requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Licensed Patent Rights.

8.2 Information to Licensee. TSRI shall keep Licensee timely informed with regard to the patent application and maintenance processes. TSRI shall deliver to Licensee copies of all patent applications, amendments, related correspondence, and other related matters in a timely manner.

8.3 Patent Costs. Licensee acknowledges and agrees that the licenses granted hereunder are in partial consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee agrees to pay and shall pay for all expenses referenced in Sections 8.1 and 8.2 hereof. In addition, Licensee agrees to reimburse and shall reimburse TSRI for all patent costs and expenses previously paid or associated with Licensed Patent Rights incurred by TSRI up to the Effective Date, less any such patent costs and expenses previously reimbursed by Licensee under the Option Agreement. Licensee agrees to pay and shall pay all such past and future patent expenses associated with the work on the Licensed Patent Rights performed by TSRI's Office of Patent Counsel and/or its independent counsel within thirty (30) days after Licensee receives an itemized invoice therefor. Failure of Licensee to pay patent costs and expenses as set forth in this Section 8.3 shall immediately relieve TSRI from its obligation to incur any further patent costs and expenses. For the avoidance of doubt, should Licensee not pay any patent costs and expenses due to TSRI or independent counsel within thirty (30) days after Licensee's receipt of any itemized invoice therefor, TSRI shall have the right, at its sole discretion, to cease all patent prosecution and allow Licensed Patent Rights to go abandoned. Such action by TSRI shall not constitute a breach of this Agreement. Payment can be made directly to independent counsel, or to TSRI. Licensee may elect with a minimum of ninety (90) days' prior written notice to TSRI, to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Licensed Patent Rights. Licensee shall remain liable for all patent prosecution and maintenance costs incurred prior to the date of notice of election and for a ninety (90) day period following the date of such notice. Any such patent application or patent so elected shall immediately be excluded from the definition of Licensed Patent Rights and from the scope of the licenses granted under this Agreement, and all rights relating thereto shall revert to TSRI and may be freely licensed by TSRI.

8.4 Ownership. The patent applications filed and the patents obtained by TSRI pursuant to Section 8.1 hereof shall be owned solely by TSRI, assigned solely to TSRI and deemed a part of Licensed Patent Rights.

8.5 TSRI Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Licensed Patent Rights are terminated in accordance with the terms of this Agreement, TSRI shall have the right to take whatever action TSRI deems appropriate to obtain or maintain the corresponding patent protection. If TSRI pursues patents under this Section 8.5, Licensee agrees to use commercially reasonable efforts to
cooperate fully, including by providing, at no charge to, all appropriate technical data and executing all necessary legal documents.

8.6 Infringement Actions.

8.6.1 Prosecution of Infringements.

a. Each party agrees to provide written notice to the other party promptly after becoming aware of any infringement of the Licensed Patent Rights by a third party and of any available evidence thereof. After receiving notice from the other party of a possible infringement of the Licensed Patent Rights by a third party, the parties will consult with each other about whether and to what extent such third party's products or activities are infringing upon the Licensed Patent Rights, and the extent to which the infringing products or activities are damaging sales of Licensed Products. Within ninety (90) days of such notice, Licensee shall notify TSRI of its decision and proposed course of action, where the date of Licensee's notice to TSRI, or the expiration of the ninety (90) day period, shall be known as the "**Commencement Date**". If Licensee determines, in its reasonable commercial discretion, and provides TSRI with its assessment supporting such determination, that the prosecution of such infringement would be commercially unreasonable, and TSRI does not object to such determination, then Licensee shall not have the obligation as set forth under Section 8.6.1(d) to prosecute such infringement and the consequences in Section 8.6.1(d) shall not apply; *provided, however,* that TSRI shall then have the right, but not the obligation, to prosecute such infringement.

b. In the event Licensee is obligated to, pursuant to Section 8.6.1(d) below, or elects to, pursuant to 8.6.1(a) above, pursue a third party infringer, then Licensee may enter into settlements, stipulated judgments or other arrangements respecting such infringement, at its own expense, but only with TSRI's prior written consent, which will not be unreasonably withheld or delayed. TSRI shall permit any action to be brought in its name if required by law, and Licensee shall hold TSRI harmless from any costs, expenses or liability respecting all such infringements. TSRI agrees to provide reasonable assistance which Licensee may require in any litigation arising in accordance with the provisions of this Section 8.6.1, for which Licensee shall pay to TSRI a reasonable hourly rate of compensation, including, without limitation, joining such action as a party plaintiff if necessary or desirable for initiation or continuation of such action; provided that the Licensee reimburses TSRI promptly for any reasonable costs and expenses incurred by TSRI in connection with providing such assistance.

c. In the event Licensee is not obligated to, pursuant to Section 8.6.1(d) below, pursue a third party infringer, then Licensee shall notify TSRI in writing promptly and TSRI shall have the right, but not the obligation, to prosecute such infringement on its own behalf. If TSRI prosecutes such infringement, then TSRI may, at its discretion, convert the licenses granted to Licensee with respect to the patent(s) at issue to a non-exclusive license. Conversion by TSRI pursuant to this Section 8.6.1(c) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of TSRI's prosecution of such infringement.

d. Notwithstanding the foregoing Sections 8.6.1(b)-8.6.1(c), in order to maintain the licenses granted hereunder in force, Licensee shall have the first right and obligation to prosecute any and all third party infringements. Unless Licensee

and TSRI otherwise agree, pursuant to Section 8.6.1(a), that the prosecution of any third party infringement is commercially unreasonable, failure on the part of Licensee to prosecute any third party infringement within six (6) months after the Commencement Date shall be grounds for termination of the licenses granted to Licensee with respect to the patent(s) at issue, and such patent(s) shall thereafter be excluded from the definition of Licensed Patent Rights. Termination by TSRI pursuant to this Section 8.6.1(d) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of Licensee's failure to prosecute such infringement.

8.6.2 Allocation of Recovery. Any damages, settlements or other recovery from an infringement action undertaken by Licensee pursuant to Section 8.6.1 shall first be used to reimburse the parties for the costs and expenses incurred in such action, and shall thereafter be allocated between the parties as follows: (i) [***] to TSRI, (ii) and [***] to Licensee. If Licensee fails to prosecute any such action to completion or if TSRI prosecutes any such action, then any damages, settlements, or other recovery, net of the parties' costs and expenses incurred in such infringement action shall [***].

8.6.3 Defense of Infringements. Licensee shall have the first right, but not the obligation, to defend any suits against Licensee, Affiliates or Sublicensees alleging infringement of any third party intellectual property right due to Licensee's use of the Licensed Patent Rights or its development or commercialization of Licensed Products or Licensed Processes. Licensee shall promptly notify TSRI in writing of such claims, and TSRI and Licensee shall confer with each other and cooperate during the defense of any such action. If Licensee finds it necessary or desirable for TSRI to become a party to such action, TSRI shall execute all papers as may reasonably be necessary to add TSRI as a party to such action. Licensee shall bear all costs and expenses associated with any such suit or action. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate in any such action. In no event shall TSRI have any out-of-pocket liability for costs of litigation or royalties, damages and/or settlement amounts due to any third party (except for costs of its own counsel as provided above). If the third party intellectual property right is held not to be infringed, unenforceable or invalid, any recovery of damages for such suit shall be applied first [***] shall be entitled to keep the balance remaining from any such recovery. For the purpose of clarity, it is acknowledged that this Section 8.6.3 shall in no way limit Licensee's obligations under Section 9.1 to indemnify, defend and hold harmless TSRI with respect to third party claims alleging infringement of such third party's intellectual property rights.

8.6.4 Declaratory Judgment Actions. If a declaratory judgment action is brought naming TSRI or Licensee or any of its Affiliates or Sublicensees as a defendant and alleging invalidity, unenforceability or non-infringement of any Licensed Patent Rights, Licensee or TSRI, as the case may be, shall promptly notify the other party in writing and Licensee may elect, upon written notice to TSRI within twenty (20) days after receiving or giving notice of the commencement of such action, to take over the sole control of such action at its own expense. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate in any such action. If Licensee does not

defend any such action, then TSRI shall have the right, but shall not be obligated, to defend such action at TSRI's expense.

9. Indemnity and Insurance.

9.1 Indemnity. Licensee hereby agrees to indemnify, defend (by counsel reasonably acceptable to TSRI) and hold harmless TSRI and any parent, subsidiary or other affiliated entity of TSRI and their trustees, directors, officers, employees, scientists, agents, successors, assigns and other representatives (collectively, the "**Indemnitees**") from and against all claims, suits, actions, damages, liabilities, losses and other expenses, including without limitation reasonable attorney's fees, expert witness fees and costs incurred by the Indemnitees, with respect to any third party claim [***] (collectively "**Claim**"), that arises out of or relates to (a) [***], (b) [***], (c) [***], (d) [***], (e) [***], and/or (f) Licensee's or any Sublicensee's failure to comply with any applicable laws, rules or regulations, except that [***]. Licensee's obligation to defend such Claims shall apply to any third party allegations or disputes that arise out of or relate to any of the items described in subparagraphs (a) through (f) above. Licensee shall not enter into any settlement of such Claims that imposes any obligation on TSRI, that does not unconditionally release TSRI from all liability or that would have a material adverse effect on TSRI's reputation or business without TSRI's prior written consent. Notwithstanding the above, Indemnitees, at their expense, shall have the right to retain separate independent counsel to assist in defending any such Claims. In the event Licensee fails to promptly indemnify and defend such Claims and/or pay Indemnitees' expenses as provided above, Indemnitees shall have the right to defend themselves, and in that case, Licensee shall reimburse Indemnitees for all of their reasonable attorney's fees, costs and damages incurred in settling or defending such Claims within thirty (30) days of each of Indemnitees' written requests. This indemnity shall be a direct payment obligation and not merely a reimbursement obligation of Licensee to Indemnitees.

9.2 Insurance. Licensee shall name TSRI and Indemnitees as additional insured parties on any commercial general liability and product liability insurance policies maintained by Licensee, its Affiliates, and Sublicensees applicable to the Licensed Products, Licensed Processes and Licensed Biological Materials.

9.2.1 Beginning at the time any such Licensed Product or Licensed Process is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by Licensee or by a Sublicensee, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance and product liability insurance in amounts and on terms consistent with industry standards for similarly situated pharmaceutical companies commercializing products, but in no case will such insurance be less than $3,000,000 per incident and $5,000,000 annual aggregate. During clinical trials involving any Licensed Product, Licensed Process or Licensed Biological Material, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance in the same amounts and terms as specified above. Licensee's commercial general liability insurance shall provide coverage for personal injury, broad form property damage, advertising injury, premises-operations, products and completed operations and contractual liability including Licensee's indemnity and other obligations under this Agreement. Licensee may elect to self-insure all or part of the foregoing on commercially reasonable terms, which must be pre-approved by TSRI in

writing; *however*, TSRI shall be obligated to approve such self-insurance if Licensee has and continues to maintain minimum cash reserves covering such self-insurance or minimum book equity, in either case in the amount of Five Hundred Million Dollars ($500,000,000), which Licensee sufficiently demonstrates to TSRI in writing. The insurance coverage amounts specified herein or the maintenance of such insurance policies shall not in any way limit Licensee's indemnity or other liability under this Agreement.

9.2.2 In addition, Licensee, on behalf of itself and its insurance carriers, waives any and all claims and rights of recovery against TSRI and the Indemnitees, including without limitation all rights of subrogation, with respect to either party's performance under this Agreement or for any loss of or damage to Licensee or its property or the property of others under its control. Licensee's commercial general liability insurance policy shall also include a waiver of subrogation consistent with this paragraph in favor of TSRI and the Indemnitees. Licensee shall be responsible for obtaining such waiver of subrogation from its insurance carriers. Licensee's insurance policies shall be primary and not contributory to any insurance carried by its Sublicensees or TSRI. Upon TSRI's request, Licensee shall deliver to TSRI copies of insurance certificates or binders and such waiver of subrogation that complies with the requirements of this Section 9.2.2. Licensee shall provide TSRI with written notice at least fifteen (15) days prior to the cancellation, non-renewal or material change in such insurance described in Section 9.2.1. If Licensee does not obtain replacement insurance providing comparable coverage within such fifteen (15) day period, TSRI shall have the right to terminate this Agreement for material breach under Section 12.3.

9.2.3 Licensee shall maintain such commercial general liability insurance beyond the expiration or termination of this Agreement during (a) the period that any Licensed Product or Licensed Process is being commercially distributed or sold by Licensee or by a Sublicensee, Affiliate or agent of Licensee; and (b) a reasonable period after the period referred to in Section 9.2.3(a) above, which in no event shall be less than five (5) years.

9.3 Pre-Challenge Requirements. Licensee will provide written notice to TSRI at least [***] prior to Licensee directly or indirectly initiating a Challenge in or before any court or patent office. Licensee will include with such written notice [***] to enable the parties to attempt in good faith to mutually resolve such issues.

10. Limited Warranty.

10.1 Limited Warranty. TSRI hereby represents and warrants that, to the actual knowledge of TSRI, and only as of the Effective Date, (a) it is the sole and exclusive owner, appointed agent for licensing or licensee of all right, title and interest in and to the Licensed Patent Rights that exist as of the Effective Date; (b) it has the power and authority to grant the licenses provided for herein to Licensee, and that it has not earlier granted, or assumed any obligation to grant, any rights in such Licensed Patent Rights to any third party that have not been waived that would conflict with the rights granted to Licensee herein; and (c) this Agreement constitutes the legal, valid and binding obligation of TSRI, enforceable against TSRI in accordance with its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.2 Licensee hereby warrants and represents this Agreement constitutes the legal, valid and binding obligation of Licensee, enforceable against Licensee in accordance with its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.3 Disclaimer. EXCEPT AS PROVIDED IN SECTION 10.1, TSRI MAKES NO OTHER WARRANTIES CONCERNING LICENSED PATENT RIGHTS, LICENSED BIOLOGICAL MATERIALS OR ANY OTHER MATTER WHATSOEVER, INCLUDING WITHOUT LIMITATION ANY EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS OR ARISING OUT OF COURSE OF CONDUCT OR TRADE CUSTOM OR USAGE, AND DISCLAIMS ALL SUCH EXPRESS OR IMPLIED WARRANTIES. TSRI MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF LICENSED PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT, LICENSED PROCESS OR LICENSED BIOLOGICAL MATERIAL WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING UPON ANY LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS COVERED BY THIS AGREEMENT. FURTHER, TSRI HAS MADE NO INVESTIGATION AND MAKES NO REPRESENTATION THAT THE LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS ARE SUITABLE FOR LICENSEE'S PURPOSES.

10.4 Limitation of Liability. IN NO EVENT SHALL EITHER PARTY BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION DAMAGES FOR LOSS OF PROFITS OR EXPECTED SAVINGS) ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ITS SUBJECT MATTER, EXCEPT FOR LIABILITY FOR BREACH BY SUCH PARTY OF ANY OF THE CONFIDENTIALITY PROVISIONS IN SECTION 11 AND EXCEPT FOR LICENSEE'S INDEMNITY UNDER SECTION 9.1. TSRI'S AGGREGATE LIABILITY, IF ANY, FOR ALL DAMAGES OF ANY KIND RELATING TO THIS AGREEMENT OR ITS SUBJECT MATTER SHALL NOT EXCEED THE AMOUNT PAID BY LICENSEE TO TSRI UNDER THIS AGREEMENT. THE FOREGOING EXCLUSIONS AND LIMITATIONS SHALL APPLY TO ALL CLAIMS AND
ACTIONS OF ANY KIND AND ON ANY THEORY OF LIABILITY, WHETHER BASED ON CONTRACT, TORT (INCLUDING, BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY), OR ANY OTHER GROUNDS, AND REGARDLESS OF WHETHER A PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. THE PARTIES FURTHER AGREE THAT EACH WARRANTY DISCLAIMER, EXCLUSION OF DAMAGES OR OTHER LIMITATION OF LIABILITY HEREIN IS INTENDED TO BE SEVERABLE AND INDEPENDENT OF THE OTHER PROVISIONS BECAUSE THEY EACH REPRESENT SEPARATE ELEMENTS OF RISK ALLOCATION BETWEEN THE PARTIES.

11. Confidentiality and Publication.

11.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement, and for a period of five (5) years after this Agreement terminates, a party receiving Confidential Information of the other party will (a) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary information; (b) not disclose such Confidential Information to any third party without prior written consent of the other party; and (c) not use such Confidential Information for any purpose except those permitted by this Agreement. Notwithstanding the foregoing, if a party is required by law, regulation or court order to disclose Confidential Information of the other party, the party required to make such disclosure shall (i) promptly send a copy of the order or notice to the other party not later than ten (10) days before the proposed disclosure or such shorter period of time as may be reasonably practical under the circumstances; (ii) cooperate with the other party if the other party wishes to object or condition such disclosure through a protective order or otherwise; (iii) limit the extent of such disclosure to the minimum required to comply with the order or notice; and (iv) use reasonable efforts to seek confidential treatment (i.e., filing "under seal") for that disclosure. In addition, a party may disclose Confidential Information of the other party to its Affiliates and employees, to Sublicensees and potential Sublicensees (in the case of Licensee), or to other third parties who are investors or potential investors in connection with due diligence or similar investigations or in confidential financing documents, provided, in each case, that any such Affiliate, employee, Sublicensee, potential Sublicensee or other third party investor or potential investor agrees in writing to be bound by terms of confidentiality and non-use at least as stringent as those set forth in this Section 11, but with no further right to disclose or otherwise distribute TSRI's Confidential Information.

11.2 Publications. Licensee agrees that TSRI shall have the right to publish in accordance with its general policies, and that this Agreement shall not restrict, in any fashion, TSRI's right to publish.

11.3 Publicity. Except as otherwise provided herein or required by any applicable law, rule or regulation (including, without limitation, rules of the U.S. Securities and Exchange Commission and rules of any stock exchange upon which Licensee's securities may be listed), no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or under any such sublicense agreements, without the prior written approval of the other party, which approval shall not be unreasonably withheld. Scientific publications published in accordance with Section 11.2 of this Agreement shall not be construed as publicity governed by this Section 11.3.

12. Term and Termination.

12.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the licenses granted hereunder, shall terminate upon termination of the royalty obligations as provided in Section 3.10 hereof.

12.2 Termination Upon Mutual Agreement. This Agreement may be terminated by mutual written consent of both parties.

12.3 Termination by TSRI. TSRI may terminate this Agreement as follows:

a. If Licensee does not make a payment due hereunder and fails to cure such non-payment (including the payment of interest in accordance with Section 14.2) within thirty (30) days after the date of notice in writing of such non-payment by TSRI;

b. If Licensee defaults upon its indemnification and insurance obligations under Section 9 and the default has not been remedied within thirty (30) days after the date of notice in writing of such default by TSRI;

c. As provided in Section 6.2;

d. Upon written notice to Licensee in the event of the filing of bankruptcy or the bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy or insolvency laws;

e. If Licensee is convicted of a felony relating to the development, manufacture, use, marketing, distribution or sale of Licensed Products, Licensed Processes or Licensed Biological Materials;

f. In the event Licensee brings any Challenge(s), TSRI has the right to immediately terminate this Agreement without any liability and without any opportunity to cure by Licensee upon written notice to Licensee. In the event that Sublicensee brings any Challenge(s), Licensee agrees that it will terminate such Sublicense;

g. Except as provided in subparagraphs (a) - (f) above, if Licensee commits a material breach of any of its obligations under this Agreement and
the material breach has not been remedied within ninety (90) days after the date of notice in writing of such default by TSRI.

12.4 Termination by Licensee. Licensee may terminate this Agreement by giving ninety (90) days' advance written notice of termination to TSRI.

12.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date, other than the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such expiration in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to expiration in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9,

2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.5, 12.8 and 14 shall also survive the expiration of this Agreement.

12.6 Rights Upon Termination.

12.6.1 Notwithstanding any other provision of this Agreement, upon any termination of this Agreement prior to the regularly scheduled expiration date of this Agreement, the licenses granted hereunder shall terminate and revert to TSRI. Except as otherwise provided in Section 12.7 of this Agreement with respect to work-in-progress, upon such termination, Licensee shall have no further right to develop, manufacture or market any Licensed Product, Licensed Process, or to otherwise use any Licensed Patent Rights or any Licensed Biological Materials. Upon any such termination, Licensee shall promptly return all materials, samples, documents, information, and other materials which embody or disclose Licensed Patent Rights or any Licensed Biological Materials; *provided*, *however*, that Licensee shall not be obligated to provide TSRI with proprietary information which Licensee can show that it independently developed. Any such termination shall not relieve either party from any obligations accrued to the date of such termination, including without limitation the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such termination or as provided in Section 12.7, in each case in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to termination in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9, 2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.6, 12.8 and 14 shall also survive the termination of this Agreement.

12.6.2 Any sublicense shall, upon the delivery of written notice by Sublicensee, except those Sublicensee's in default, to TSRI prior to termination of this Agreement, survive termination of this Agreement on the same terms and conditions set forth in the applicable sublicense for a period of [***] following termination of this Agreement (the "**Temporary License Period**"); *provided however*, that if such written notice is not delivered prior to termination of this Agreement, such sublicense shall immediately terminate upon termination of this Agreement. In the event a Sublicensee provides such written notice, as a condition precedent to TSRI's obligation to grant the direct license to such Sublicensee as set forth below, such Sublicensee must pay to TSRI all past due royalties, non-royalty revenue,
patent costs and all other monies owed by Licensee to TSRI under this Agreement. Upon TSRI's receipt of all such outstanding monies, TSRI shall enter into a license agreement directly with such Sublicensee (the "**New License Agreement**"). Each New License Agreement shall be subject to the same non-financial terms and conditions as those in this Agreement; *provided*, *however*, that each New License Agreement shall contain substantially the same terms and conditions regarding sublicense scope, sublicense territory, duration of sublicense grant, and diligence obligations of the Sublicensee as the sublicense agreement between such Sublicensee and Licensee. Notwithstanding the above, TSRI's obligation to enter into a New License Agreement is expressly conditioned upon each of the following: (i) Sublicensee shall agree in the New License Agreement to terms providing that in no event shall TSRI be liable to Sublicensee for any actual or alleged breach of such sublicense agreement by Licensee; (ii) TSRI shall not have any obligations to such Sublicensee other than TSRI's obligations to Licensee as set forth herein; (iii) each New License Agreement shall be subordinate and comply in all respects to the

applicable provisions of this Agreement, and the financial terms of each New License Agreement, including without limitation, the running royalty rate, shall be consistent with the terms of the sublicense agreement with Licensee, but shall in no event be less than the corresponding financial terms set forth in this Agreement, including without limitation the obligation to pay minimum annual royalties and other monetary payments required to be made by Licensee to TSRI; and (iv) in no event shall TSRI be obliged to accept provisions in the New License Agreement (a) unless such provisions correspond to rights granted by Licensee to Sublicensee in conformance with this Agreement, and such provisions are not in conflict with the rights, duties and obligations accruing to Licensee under this Agreement; or (b) where such provisions are inconsistent with the legal obligations under any other sublicense agreement granted by Licensee, or by applicable federal, state or local statute or regulation. In the event Sublicensee does not comply with the provisions of this Section 12.6.2, such Sublicensee's sublicense shall immediately terminate upon expiration of the Temporary License Period. Licensee must include or specifically reference this Section 12.6.2 in each of its sublicense agreements.

12.7 Work-in-Progress. Upon any early termination of the license granted hereunder in accordance with this Agreement, Licensee shall be entitled to finish any work-in-progress and to sell any completed inventory of Licensed Products covered by such license which remain on hand as of the date of the termination, so long as Licensee sells such inventory in the normal course of business and at regular selling prices and pays to TSRI the royalties applicable to such subsequent sales in accordance with the terms and conditions as set forth in this Agreement, provided that no such sales shall be permitted after the expiration of six (6) months after the date of termination.

12.8 Final Royalty Report. Upon termination or expiration of this Agreement, Licensee shall submit a final report to TSRI, and any payments due TSRI and unreimbursed patent expenses invoiced by TSRI shall become immediately payable.

13. Assignment; Successors.

13.1 Assignment. Any and all assignments of this Agreement or any rights granted hereunder by Licensee without TSRI's prior written consent are void, except either party may assign this Agreement or rights granted hereunder without the other party's prior written consent (i) to an Affiliate of the assigning party; or (ii) to a successor in connection with the merger, consolidation or sale of all or substantially all of its assets to which this Agreement relates.

13.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of TSRI and Licensee. Any such successor or assignee of Licensee's interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

14. General Provisions.

14.1 Independent Contractors. The relationship between TSRI and Licensee is that of independent contractors. TSRI and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than independent contracting parties. TSRI and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

14.2 Late Payments. Late payments of any and all payments due hereunder shall be subject to a charge of [***] per month, or [***] whichever is greater.

14.3 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, performance, sale and use of any Licensed Product or Licensed Process, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Products or Licensed Processes.

14.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

14.5 No Use of Name. The use of the name "**The Scripps Research Institute**", "**Scripps**", "**TSRI**" or any variation thereof in connection with the advertising, distribution, sale or performance of Licensed Products or Licensed Processes is expressly prohibited. The foregoing notwithstanding, without the consent of TSRI, Licensee may state that it is licensed by TSRI under the Licensed Patent Rights and identify the inventors, their affiliation with TSRI and their relationship to Licensee, and further, Licensee may comply with disclosure requirements of all applicable laws relating to its business, including, without limitation, United Sates and state securities laws.

14.6 U.S. Manufacture. Licensee agrees to abide by the Preference for United States Industry as set forth in 37 CFR 401.14 (I), which includes Licensee's agreement that any
Licensed Product or Licensed Process sold in the United States shall be manufactured substantially in the United States.

14.7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall ensure that all foreign laws affecting this Agreement or the sale of Licensed Products or Licensed Processes are fully satisfied.

14.8 Use of Biological Materials. Licensee agrees that its use of any Licensed Biological Materials shall comply with all applicable statutes, regulations, and guidelines. Licensee agrees not to use the Licensed Biological Materials for research involving human subjects or clinical trials in the United States without complying with 21 CFR 50 and 45 CFR 46. Licensee agrees not to use the Licensed Biological Materials for research involving

human subjects or clinical trials outside of the United States without complying with the applicable regulations of the appropriate national control authorities.

14.9 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, including without limitation any and all Challenges, shall be settled by binding confidential arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("**AAA**"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

14.9.1 Location. The location of the arbitration shall be in the County of San Diego. TSRI and Licensee hereby irrevocably submit to the exclusive jurisdiction and venue of the American Arbitration Association arbitration panel selected by the parties and located in San Diego County, California for any dispute regarding this Agreement, including without limitation any Challenges, and to the exclusive jurisdiction and venue of the federal and state courts located in San Diego County, California for any action or proceeding to enforce an arbitration award or as otherwise provided in Section 14.9.5 below, and waive any right to contest or otherwise object to such jurisdiction or venue.

14.9.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator, and all arbitrators must have at least ten (10) years experience in mediating or arbitrating cases regarding the same or substantially similar subject matter as the dispute between Licensee and TSRI. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

14.9.3 Discovery. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

14.9.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

14.9.5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, *provided however*, that no punitive damages

may be awarded. No court action shall be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties. Notwithstanding anything to the contrary in this Agreement, prior to or while an arbitration proceeding is pending, either party has the right to seek and obtain injunctive and other equitable relief from a court of competent jurisdiction to enforce that party's rights hereunder.

14.9.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

14.9.7 Confidentiality. Except as set forth below, and as necessary to obtain or enforce a judgment upon any arbitration award, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws or rules or regulations of any stock exchange upon which securities are traded or listed, but will use commercially reasonable efforts to seek confidential treatment for such disclosure.

14.10 Entire Agreement; Modification. This Agreement and all of the attached Exhibits set forth the entire agreement and understanding between the parties as to the subject matter hereof, and supersede all prior or contemporaneous agreements or understandings, whether oral or written. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties.

14.11 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California without regard to its conflicts or choice of laws principles thereof.

14.12 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

14.13 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered severed from this Agreement and shall not serve to invalidate the remaining provisions thereof. The parties shall make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

14.14 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

14.15 Name. Whenever there has been an assignment or a sublicense by Licensee as permitted by this Agreement, the term "**Licensee**" as used in this Agreement shall also include and refer to, if appropriate, such assignee or Sublicensee (to the extent of such assignment or sublicense).

14.16 Attorneys' Fees. In the event of a dispute between the parties hereto or in the event of any default hereunder, the party prevailing in the resolution of any such dispute or default shall be entitled to recover its reasonable attorneys' fees and other costs incurred in connection with resolving such dispute or default. Notwithstanding anything to the contrary herein, the parties agree that this Section 14.16 shall not apply and attorney's fees and costs shall not be awarded to either party with respect to any Challenge or any action where Licensee alleges that it is not required to comply with or perform some or all of the provisions of this Agreement based upon a good faith claim that any of the Licensed Patent Rights are invalid or unenforceable. TSRI and Licensee each represent that it has been represented by its own counsel in the negotiation and execution of this Agreement. Each party further represents that it has relied solely on the advice and representation of its respective counsel in agreeing to this Section 14.16 and all of the other provisions of this Agreement.

14.17 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by facsimile machine, charges prepaid, or by overnight courier, postage prepaid and shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

| | |
|---|---|
| For TSRI: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-9<br>La Jolla, California 92037<br>Attention: Vice President, Business Development<br>Fax No.: (858)784-9910 |
| with a copy to: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-8<br>La Jolla, California 92037<br>Attention: Chief Business Counsel<br>Fax No.: (858) 784-9399 |
| For Licensee: | Fate Therapeutics, Inc.<br>3535 General Atomics Court, Suite 200<br>San Diego, CA 92121<br>Attention: Chief Financial Officer<br>Fax No.: (858) 875-1843 |

With a copy to: Cooley Godward Kronish LLP
4401 Eastgate Mall
San Diego, CA 92121-190
Attn: Tom A. Coll, Esq.
Telephone: (858) 550-6000
Facsimile: (858) 550-6420

Notices shall be deemed delivered upon the earlier of (a) when received; (b) three (3) days after deposit into the U.S. mail; (c) the date notice is sent via telefax, telex or cable; or (d) the day immediately following delivery to an overnight courier guaranteeing next-day delivery (except Sunday and holidays).

14.18 Compliance with U.S. Laws. Nothing contained in this Agreement shall require or permit TSRI or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

**IN WITNESS WHEREOF**, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

| TSRI: | LICENSEE: |
|---|---|
| THE SCRIPPS RESEARCH INSTITUTE | FATE THERAPEUTICS, INC. |
| By: /s/ Illegible | By: /s/ J. Scott Wolchko |
| Title: Ex. VP/COO | Title: CFO |

**EXHIBIT A**

**LICENSED BIOLOGICAL MATERIALS**

[***]

**EXHIBIT B**

**LICENSED PATENT RIGHTS**

[***]

**EXHIBIT C**

**LICENSEE'S COMMERCIAL DEVELOPMENT PLAN**
(including Benchmarks)

| Benchmark | Timeline |
|---|---|
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |

Notwithstanding anything to the contrary in the Agreement, in the event that Licensee is unable to achieve a given Benchmark according to its applicable timeline, Licensee may, on a one-time only basis under the Agreement, extend the timeline by [***] by making a [***] payment to TSRI (where, for the avoidance of doubt, all later occurring Benchmark(s) shall also be similarly extended by [***].

**EXHIBIT D**

**INFORMATION AND MATERIALS**

TSRI and Licensee shall add items to this Exhibit D upon mutual agreement.

**Exhibit 10.22**

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED (INDICATED BY: [***]) FROM THE EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY EXPOSED.

# LICENSE AGREEMENT

**by and between**

**THE SCRIPPS RESEARCH INSTITUTE,**
**a California nonprofit**
**public benefit corporation**

**and**

**FATE THERAPEUTICS, INC.**
**a Delaware corporation**

**LICENSE AGREEMENT**

This License Agreement is entered into and made effective as of this 24th day of August, 2010 (the "**Effective Date**"), by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("**TSRI**"), and Fate Therapeutics, Inc., a Delaware corporation ("**Licensee**"), each located at the respective address set forth in Section 14.17 below, with respect to the facts set forth below.

**RECITALS**

A. TSRI is the owner of certain Licensed Patent Rights and has the right to grant licenses under such Licensed Patent Rights, subject to the rights set forth in Sections 2.8 and 2.9 of this Agreement.

B. TSRI desires to have the Licensed Patent Rights developed and commercialized to benefit the public and is willing to grant a license thereunder to Licensee.

C. Licensee desires to obtain a license under the Licensed Patent Rights and to use the Licensed Biological Materials pursuant to the terms and conditions set forth herein.

**NOW**, **THEREFORE**, in consideration of the mutual covenants and conditions set forth herein, TSRI and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth herein.

1.1 Affiliate. The term "**Affiliate**" shall mean any entity which directly or indirectly controls, or is controlled by, or is under common control with, Licensee. The term "control" as used herein means (a) in the case of corporate entities, direct or indirect ownership of at least fifty percent (50%) of the stock or shares entitled to vote for the election of directors or with the power to direct the management and policies of such corporate entities; or (b) in the case of non-corporate entities, direct or indirect ownership of at least fifty percent (50%) of the equity interests with the power to direct the management and policies of such non-corporate entities. All Affiliates shall be deemed to be licensees under Section 2.1-2.4 of this Agreement.

1.2 Confidential Information. The term "**Confidential Information**" shall mean any and all proprietary or confidential information of TSRI or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Confidential Information shall also include any information which, given the circumstances surrounding disclosure, would be considered confidential by the disclosing party. Information shall not be considered confidential to the extent that either party can establish by competent proof that it:

a. Is publicly disclosed through no fault of the receiving party, either before or after it becomes known to the receiving party; or

b. Was known to the receiving party without obligation of confidentiality prior to the date of this Agreement, which knowledge was acquired independently and not from the disclosing party (including such party's employees, consultants or agents); or

c. Is subsequently disclosed to the receiving party without obligation of confidentiality in good faith by a third party who is not under any obligation to maintain the confidentiality of such information, and without breach of this Agreement by a receiving party; or

d. Has been published by a third party not in breach of any obligation of confidentiality; or

e. Was independently developed by the receiving party without the use of or reliance on the Confidential Information of the disclosing party.

If Confidential Information is required to be disclosed by the receiving party by law or court order, the party required to make such disclosure shall limit the same to the minimum required to comply with the law or court order, and shall use reasonable efforts to attempt to seek confidential treatment for that disclosure, and prior to making such disclosure by the receiving party shall notify the other party, not later than ten (10) days (or such shorter period of time as may be reasonably practicable under the circumstances) before the disclosure in order to allow that other party to comment and/or to obtain a protective or other order, including extensions of time and the like, with respect to such disclosure.

1.3 Field. The term "**Field**" shall mean all fields.

1.4 Licensed Biological Materials. The term "**Licensed Biological Materials**" shall mean the materials identified in Exhibit A and supplied by TSRI to Licensee, together with any progeny or mutants of such materials, or unmodified derivatives of such materials (defined as substances created by Licensee that constitute an unmodified functional sub-unit or product expressed by such materials).

1.5 Licensed Patent Rights. The term "**Licensed Patent Rights**" shall mean rights arising out of or resulting from (a) the U.S./PCT Patent Application(s) set forth on Exhibit B; (b) the foreign patent applications associated with the application(s) referenced in sub clause (a) above; (c) the patents issued from the application(s) referenced in sub clauses (a) and (b), and in sub clauses (d) and (e) below; (d) divisionals, continuations, reissues, reexaminations, renewals, and extensions of any patent or application set forth in sub clauses (a)-(c) above; and (e) all claims of continuations-in-part that are entitled to the benefit of the priority date of the application(s) referenced in sub clause (a) above.

1.6 Licensed Product. The term "**Licensed Product**" shall mean any product (a) the manufacture, use, importation, sale or offer for sale of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights,

or (b) that is comprised of, utilizes or incorporates Licensed Biological Materials, or (c) that is discovered, developed or made using a Licensed Process.

1.7 Licensed Process. The term "**Licensed Process**" shall mean any method or process (a) claimed in a Valid Claim of any of the Licensed Patent Rights, (b) the practice of which would, in the absence of the license granted by this Agreement, infringe a Valid Claim of any of the Licensed Patent Rights, or (c) that utilizes or incorporates Licensed Biological Materials.

1.8 Net Sales. The term "**Net Sales**" shall mean the gross amount invoiced by Licensee and its Affiliates or its Sublicensees, or any of them, on all sales of Licensed Products and Licensed Processes, less (a) discounts actually allowed; (b) credits for claims, allowances, retroactive price reductions or returned or rejected goods; (c) amounts invoiced and actually paid for third party transportation, insurance or shipping charges to an end user of the Licensed Product or Licensed Process; (d) any taxes or other governmental charges actually paid in connection with the sale, transportation, or delivery of Licensed Products or Licensed Processes (but excluding what are commonly known as income taxes and value-added taxes). Net Sales shall include all consideration invoiced by Licensee, its Affiliates or its Sublicensees in exchange for any Licensed Products or Licensed Processes including without limitation any monetary payments or, with regard to any other property paid in exchange for any Licensed Products or Licensed Processes, an amount in cash equal to the fair market value of such property. For purposes of determining Net Sales, a sale shall be deemed to have occurred when an invoice therefore is generated, the Licensed Product shipped for delivery or the Licensed Process completed or provided. Sales of Licensed Products or Licensed Processes by and amongst Licensee, its Affiliates or Sublicensees shall be excluded, unless the Affiliates or Sublicensees consume the Licensed Products or Licensed Processes, and only the subsequent sale of such Licensed Products or Licensed Processes to unrelated parties shall be deemed Net Sales hereunder.

1.9 Research Tool. The term "**Research Tool**" shall mean a Licensed Product, Licensed Process or Licensed Biological Material that is designed and developed solely for use in performing basic research including, without limitation, basic research having as its primary purpose understanding the biology or pathology of cells or cell lines and diseases or disorders affecting them, or education purposes, and not for Commercial Drug Development purposes. "**Commercial Drug Development**" includes the following activities: (a) any human clinical use or veterinary use (including, without limitation, therapeutic, prophylactic or diagnostic use); (b) any screening of compound libraries; (c) any development, manufacture or provision of any commercial pharmaceutical, healthcare or consumer products, processes or services; or (d) any provision of services related to the above (a)-(c).

1.10 Sublicensee. The term "**Sublicensee**" shall mean any third party (other than an Affiliate) to whom Licensee grants a sublicense with respect to the rights conferred upon Licensee under this Agreement, as contemplated by Section 2.6.

1.11 Valid Claim. The term "**Valid Claim**" shall mean a claim of any issued and unexpired patent within the Licensed Patent Rights which has not been revoked or held

unenforceable, unpatentable or invalid by a decision of a court or governmental body of competent jurisdiction in a ruling that is unappealed or unappealable, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise. The term "**Valid Claim**" shall also include the claims of a pending patent application within the Licensed Patent Rights which have not been (i) cancelled, withdrawn, abandoned or fmally disallowed without the possibility of appeal or refiling of such application, or (ii) pending for a period of more than [***] from the date of the first examination of the patent application.

2. Grant of License.

2.1 Grant of Exclusive License for Licensed Products. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights, including, without limitation, to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported Licensed Products in the Field.

2.2 Grant of Exclusive License for Licensed Processes. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, under the Licensed Patent Rights to make and have made, to use and have used, to practice and have practiced, to offer to sell and have offered for sale, to sell and have sold, and to import and have imported any Licensed Processes in the Field.

2.3 Grant of Exclusive License for Licensed Biological Materials. TSRI hereby grants to Licensee and Licensee accepts, subject to the terms and conditions of this Agreement, an exclusive worldwide license, with the right to sublicense, to the Licensed Biological Materials to make and have made, to use and have used, to sell and have sold, to offer to sell and have offered for sale, and to import and have imported, and to transfer and distribute any Licensed Biological Materials in the Field.

2.4 Research Tools.

a. For clarity, Research Tools are subject to the license grants in Sections 2.1-2.3, Section 2.8, the retained rights set forth in Sections 2.9, and the due diligence requirements in Section 6.

b. If TSRI reasonably believes that a Licensed Product, Licensed Process or Licensed Biological Material should be classified as a Research Tool hereunder, [***]. If the Parties are unable to reach agreement regarding the classification within [***] after receipt of such notice, either party may request resolution of such issue in accordance with the dispute resolution process set forth in Section 14.9 (and, during any such process, such Licensed Product, Licensed Process or Licensed Biological Material shall not be classified as a Research Tool under this Agreement).

c. If such item is ultimately classified as a Research Tool as provided above, then Licensee shall comply with the due diligence obligations set forth in Section 6.2.b.

2.5 Covenants Not To Grant Third Party Licenses. As of the Effective Date and until this Agreement is terminated, TSRI covenants not (i) to grant to any third party any licenses or any rights to Licensed Patent Rights in the Field, or (ii) to grant to any third party any licenses or any rights to, or to transfer samples of, Licensed Biological Materials in the Field, except as permitted under Sections 2.8 and 2.9 hereof.

2.6 Sublicensing. Licensee shall have the right to grant and authorize sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement. Sublicensees shall not have the right to further sublicense without TSRI's prior written consent, which will not be unreasonably withheld or delayed. Any sublicense granted under this Section 2.6 shall be subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement (including the provisions regarding governmental interest, reservation of rights, development efforts, reporting, audit rights, indemnity, insurance, limited warranty, disclaimer, limitation of liability, confidentiality, and rights upon expiration or termination). It is anticipated that Licensee may enter into agreements with third parties wherein some of the rights granted herein will be transferred to third parties who are performing a service for Licensee, such as a contract manufacturer or contract research organization, but specifically excluding agreements that contain the rights to sell, or offer for sale Licensed Products or Licensed Processes. These types of service agreements are not subject in all respects to the applicable provisions contained in this Agreement as are needed to enable Licensee to comply with this Agreement but shall include the following provisions contained herein: indemnity, insurance, limited warranty, disclaimer, limitation of liability, and confidentiality. In the event of a conflict between this Agreement and the terms of any sublicense, the terms of this Agreement shall control. Licensee shall forward to TSRI a copy of any and all fully executed sublicense and service agreements within thirty (30) days of execution.

2.7 No Other License. This Agreement confers no license or rights by implication, estoppel, or otherwise under any patent applications or patents or other intellectual property of TSRI other than Licensed Patent Rights regardless of whether such patents or intellectual property are dominant or subordinate to Licensed Patent Rights.

2.8 Governmental Interest. Licensee and TSRI acknowledge that TSRI has received, and expects to continue to receive, funding from the United States Government in support of TSRI's research activities. Licensee and TSRI acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to the rights of the United States Government, existing and as amended, which may arise or result from TSRI's receipt of research support from the United States Government, including but not limited to, 37 CFR 401, the NIH Grants Policy Statement and the NIH Guidelines for Obtaining and Disseminating Biomedical Research Resources.

2.9 Reservation of Rights. TSRI reserves the right to use for any internal basic research or educational purposes any Licensed Patent Rights and Licensed Biological Materials licensed hereunder, without TSRI being obligated to pay Licensee any royalties or other compensation or to account to Licensee in any way. During the term, including any extension thereof, of the Research Funding and Option Agreement dated February 19, 2008 between Licensee and TSRI ("**Research Agreement**"), TSRI will not enter into any agreements with any other third party for the performance of sponsored research in the same field of research described in Appendix A of such Research Agreement.

In addition, TSRI reserves the right to grant non-exclusive licenses to use the Licensed Patent Rights and Licensed Biological Materials for internal basic research and educational purposes to other nonprofit or academic institutions, and in no event for any Commercial Drug Development activities. TSRI may distribute Licensed Biological Materials to other nonprofit or academic institutions (but in no event to any for-profit third party) for the uses expressly permitted above, under the terms of a Material Transfer Agreement with such institution (an "**MTA**"). Licensee may request on an annual basis a list of the parties with whom TSRI has entered into an MTA for Licensed Patent Rights and Licensed Biological Materials, and TSRI shall provide such list within thirty (30) days of its receipt of such request by Licensee.

2.10 Know-how License. TSRI grants to Licensee a non-exclusive license to utilize the information, and materials listed on Exhibit D in the exploitation of the License Patent Rights.

3. Royalties.

3.1 License Issue Fee. Licensee agrees to pay and shall pay to TSRI a noncreditable, nonrefundable license issue fee in the amount of Ten Thousand U.S. Dollars (U.S. $10,000) within fifteen (15) days of the Effective Date (the "**License Issue Fee**"). Failure of Licensee to make this payment shall render this Agreement null and void (ab initio).

3.2 Minimum Annual Royalty. Licensee agrees to pay and shall pay to TSRI a nonrefundable minimum annual royalty in the amount of [***]. The first payment is due no later than January 1, 2010 and on January 1st of each subsequent calendar year until the first January 1 after the first commercial sale of the first Licensed Product by Licensee or any of its Sublicensees, at which time the amount of the minimum annual royalty shall become and shall remain [***] (the "**Minimum Annual Royalty Fee**"). Such payments shall be credited against running royalties due for that calendar year and Licensee's royalty reports shall reflect such a credit. Such payments shall not be credited against milestone payments (if any), Sublicensing Payments (if any), nor against royalties due for any preceding or subsequent calendar year.

3.3 Running Royalties. Licensee agrees to pay and shall pay to TSRI a running royalty, on a country-by-country basis, in the following percentage amounts of Net Sales of Licensed Products sold or transferred, or Licensed Processes performed, by Licensee, Affiliates or Sublicensees,

a. where such sale or transfer or performance in the applicable country then infringes one or more Valid Claims contained in the Licensed Patent Rights for such country: (i) [***]; (ii) [***]; (iii) [***]; and (iv) [***]; *provided, however*, where such sale or transfer or performance in the applicable country does not then infringe one or more Valid Claims contained in the Licensed Patent Rights for such country, the running royalty percentages as set forth above in 3.3.a(i)-(iv), as applicable, shall be reduced by [***]; and

b. where the manufacture, use or sale of such Licensed Product or Licensed Process is not covered by a Valid Claim in any country but utilizes, is comprised of or incorporates Licensed Biological Materials or was discovered, developed or made using any Licensed Process: [***] in any country.

3.4 Royalty Increase. Notwithstanding Section 3.3, in the event Licensee, an Affiliate, or a Sublicensee directly or indirectly initiates any action or proceeding in or before any court or patent office alleging that (i) any of the Licensed Patent Rights are invalid or unenforceable, or (ii) no royalties, Sublicense Payments, milestone payments, patent costs or other monies are due or required to be paid to TSRI under this Agreement because some or all of the Licensed Patent Rights are invalid or unenforceable (collectively "**Challenges**"), the royalty rates specified in Section 3.3 shall be increased to the following rates: [***]; *provided, however*, that such increase shall only be applied to a Licensed Product and/or a Licensed Process covered by the Licensed Patent Right(s) that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to a Licensed Product and/or a Licensed Process that is covered by Licensed Patent Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, provided that at least one (1) claim that covers such Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. Licensee (i) agrees that [***].

3.5 Royalty Credit. If Licensee, its Affiliate or its Sublicensee is required to license or acquire technology (including, but not limited to, patent rights and/or other intellectual property rights) from a third party in order to practice the Licensed Patent Rights or to develop or commercialize a Licensed Product or Licensed Process because the exploitation of the Licensed Patent Rights would infringe that third party's intellectual property rights without obtaining a license to such third party technology, [***], then Licensee may deduct up to [***] of the amount paid to such third party from the payments owing to TSRI for such Licensed Product or Licensed Process [***]. The above offset right is subject to the requirement that Licensee, its Affiliate or its Sublicensee shall not decrease the royalty or other amounts owed to TSRI under this Agreement by more than [***] of the amount due. Notwithstanding the above, Licensee, its Affiliate or its Sublicensee shall have no right to deduct or offset any royalties or other amounts with respect to any third party technology that is the subject of any cross license or similar arrangements (whether in the same or related transactions) where Licensee, its Affiliate or its Sublicensee grants or provides to such third party or its affiliates licenses, options or other rights to existing or future technology, intellectual property, research or development activities or other information or materials. Licensee will give TSRI advance written notice of any third party

arrangement sufficiently prior to seeking to deduct any payments to the third party under the terms of this Section 3.5 in order to allow TSRI and Licensee to mutually determine whether such third party's technology is required in order to practice or exploit the Licensed Patent Rights.

3.6 Combination Products. If a Licensed Product or License Process is sold in combination with another component(s), which other component(s) if sold alone would not be subject to a royalty payment hereunder, then Net Sales as applicable, from such combination sales, for purposes of calculating the amounts due under this Section 3, shall be calculated by multiplying the gross selling price of the combination product by the fraction A/(A+B), where A is the gross selling price, during the royalty period in question, of the Licensed Product or Licensed Process sold separately, and B is the gross selling price, during the royalty period in question, of the other component(s), sold separately. If the other component(s) are not sold separately during that royalty period, then the Net Sales, as applicable, on the combination product shall be as reasonably allocated between such Licensed Product and such other component(s) as mutually agreed upon by License and TSRI, based on the relative value contributed by each component; *provided, however*, that the Net Sales allocated to such Licensed Product shall not be less than [***] of the Net Sales of such combination product.

3.7 Royalty Floor. In no event may the royalty owed to TSRI be reduced by more than [***]. Licensee may utilize either the Combination Products or the Royalty Credit calculation at its discretion, but may not use both.

3.8 No Multiple Royalties. No multiple royalties shall be due because any Licensed Product or Licensed Process is covered by more than one of the Licensed Patent Rights. In such case, Licensee shall pay only one royalty at the highest of the applicable rates pursuant to Section 3.3 above.

3.9 Arms-Length Transactions. On sales of Licensed Products or Licensed Processes which are made in other than an arm's-length transaction, the value of the Net Sales attributed under this Section 3 to such a transaction shall be that which would have been received in an arm's-length transaction, based on sales of like quality and quantity products, services or processes on or about the time of such transaction.

3.10 Duration of Royalty Obligations. The royalty obligations of Licensee as to each Licensed Product or Licensed Process shall continue on a country-by-country basis until (a) (i) the expiration of the last to expire of a Valid Claim that covers such Licensed Product or Licensed Process in that country, or (ii) in the countries where no Valid Claim was filed the royalty obligation shall run concurrent with the last to expire Valid Claim in the United States or Europe, or (b) for a Licensed Product or Licensed Process not covered by a Valid Claim in any country but [***] after the date of the first commercial sale of such Licensed Product or Licensed Process in such country. Upon the termination of Licensee's royalty obligations with respect to a Licensed Product or Licensed Process in a country, the license grants contained in Sections 2.1.-2.3 shall become fully paid-up, royalty-free, perpetual and irrevocable for such Licensed Product or Licensed Process in such country.

3.11 Other License Agreements.

a. In the event that Licensee would be required to pay a Licensee Issue Fee under (i) any other license agreements arising from the Research Agreement or the Option Agreement dated January 5, 2009 between Licensee and TSRI ("**Option Agreement**"), entered into between Licensee and TSRI (such written agreements are collectively the "**Other License Agreements**") and (ii) Section 3.1 under this Agreement, then the maximum aggregate Licensee Issue Fee Licensee shall be required to pay under the Other License Agreements and this Agreement shall be $[***] under the applicable sections of such agreements.

b. In the event that Licensee would be required to pay a Minimum Annual Royalty Fee under (i) any Other License Agreements and (ii) Section 3.2 under this Agreement, then (x) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements; and (y) the maximum Minimum Annual Royalty Fee [***] shall be $[***] under the applicable sections of such agreements.

c. In the event that Licensee would, in connection with the sale or transfer of a product or service, be required to pay a royalty under (i) any Other License Agreements and (ii) Section 3.3 under this Agreement in connection with the same sale or transfer, then Licensee shall be required under the Other License Agreements and this Agreement only to pay a single royalty under such agreements in connection with such sale or transfer, such royalty to be payable at the highest of the royalties owed to TSRI under the applicable sections of such agreements.

4. Non-Royalty Revenues.

4.1 Sublicense Payments. Any and all revenues, equity interests and other consideration paid to Licensee in consideration of the grant to a third party of a sublicense to the Licensed Patent Rights and/or Licensed Biological Materials to any Sublicensee that is not an Affiliate of Licensee (collectively "**Sublicense Revenues**") shall be reported and paid to TSRI by Licensee on a quarterly basis within sixty (60) days of the end of the applicable quarter in which such Sublicense Revenues are received by Licensee. Notwithstanding the foregoing, all royalties based upon transfers or sales of Licensed Products or Licensed Processes, payments for or reimbursement for costs for research and development (to the extent itemized in the sublicense agreement), payments for or reimbursements for costs for patent prosecution, defense, enforcement and maintenance, and payments for equity and debt securities, so long as said payments reflect the current fair market value, and not a premium thereon, shall be excluded from Sublicense Revenues. Any non-cash Sublicense Revenues received by Licensee from a Sublicensee or other third party shall be valued at its fair market value as of the date of receipt, as determined in good faith by Licensee. Licensee shall pay to TSRI a non-creditable, non-refundable percentage of these Sublicense Revenues according to the following schedule ("**Sublicense Payments**"):

| Sublicense Revenues received by Licensee(on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |
| $[***] | [***] |
| More than $[***] | [***] |

Any milestone payment that Licensee makes to TSRI under Section 4.4 below upon achievement of a given milestone event by a Sublicensee would be credited against any payment due under this Section 4.1 only with respect to Sublicense Revenues received in connection with achievement of the same milestone event.

To the extent that patent rights, other intellectual property rights or other rights or obligations other than Licensed Patent Rights are sublicensed or granted by Licensee, including, without limitation, pursuant to Other License Agreements, that portion of the consideration received by Licensee and subject to this Section 4.1 shall be equitably apportioned between the Licensed Patent Rights and those other rights and obligations, and such apportionment shall be reasonable and in accordance with customary standards in the industry. Licensee shall promptly deliver to TSRI a written report setting forth such apportionment. In the event TSRI disagrees with the determination made by Licensee, TSRI shall so notify Licensee within [***] days of receipt of Licensee's report and the parties shall meet to discuss and resolve such disagreement in good faith. If the parties are unable to agree in good faith as to such fair market values within thirty (30) days, then the matter shall be submitted in accordance with the dispute resolution process set forth in Section 14.9.

Notwithstanding the foregoing, with respect to any sublicense agreement, the parties agree that the percentage of "**Sublicense Revenues**" attributable to such sublicense agreement is not cumulative across Other License Agreements, regardless of the number of Other License Agreements that are applicable to such sublicense agreement, and regardless of whether sublicenses are granted under more than one Other License Agreement.

4.2 Increase in Sublicense Payments. Notwithstanding Section 4.1, in the event Licensee directly or indirectly initiates a Challenge in or before any court or patent office, the percentages specified in Section 4.1 shall be increased to the following rates:

| Sublicense Revenues received by Licensee(on a cumulative basis) | Percent of Sublicense Revenues payable to TSRI |
|---|---|
| Up to $[***] | [***] |
| $[***] | [***] |
| More than $[***] | [***] |

*provided*, *however*, that such increase shall only be applied to Sublicense Revenues derived from the Licensed Patent Rights that are the subject of such Challenge (and shall not be applied, for the avoidance of doubt, to Sublicense Revenue derived from any Licensed Patent
Rights that are not the subject of such Challenge). Any such increase shall be effective during the pendency of such Challenge from the date Licensee first initiates such Challenge, and thereafter during the term of the Agreement, provided that at least one (1) claim that covers a Licensed Product or Licensed Process within the Licensed Patent Rights being Challenged is held to be valid and enforceable as a result of such Challenge. [***]

4.3 Product Development Milestones. Licensee agrees to pay and shall pay to TSRI the following non-creditable, non-refundable product development milestones within sixty (60) days of the end of the applicable quarter in which the first occurrence in the United States or Europe of each milestone for the first Licensed Product or first Licensed Process to meet such milestone as follows:

| Milestone | Payment |
|---|---|
| [***] | |

Each such milestone shall be payable only once under the Agreement. In the event that any Licensed Product or Licensed Process would be subject to development milestones and payments under this Section 4.3 as well as under any Other License Agreements, then it is understood and agreed that such Licensed Product or Licensed Process shall be subject to only a single schedule of development milestones and payments under this Agreement and the Other License Agreements.

5. Royalty Payments.

5.1 Sales by Licensee. Royalties payable pursuant to Section 3 herein, shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon Net Sales during the immediately preceding calendar quarter.

5.2 Sales by Sublicensees. Licensee agrees to pay and shall pay to TSRI, or cause its Sublicensees to pay to TSRI, all royalties pursuant to Section 3 herein resulting from the Net Sales of its Sublicensees, within sixty (60) days after the end of each calendar quarter, based on Net Sales during the immediately preceding calendar quarter.

6. Development and Commercialization Activities.

6.1 Commercial Development Plan. Licensee has provided to TSRI its development plan attached hereto as Exhibit C, under which Licensee intends to bring the subject matter of the Licensed Patent Rights to the point of commercial use ("**Commercial Development Plan**"), where such Commercial Development Plan is subject to the mutual agreement by Licensee and TSRI. Pursuant to the Commercial Development Plan, Licensee shall use commercially reasonable efforts to achieve the development benchmarks specified in

the Commercial Development Plan ("**Benchmarks**") within the time periods set forth in such specified in the Commercial Development Plan. Notwithstanding the foregoing, in the event that Licensee, its Affiliates or a Sublicensee, alone or together, has expended a minimum of [***] (excluding amounts paid to TSRI under the Research Funding and Option Agreement) per each
calendar year during the initial [***] period of development under such Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan) ("**Initial Development Period**"), Licensee will be deemed to have complied with Licensee's obligations under this Section 6 in connection with such Commercial Development Plan for each year during such initial [***] period.

6.2 Licensee's Commercialization Activities.

a. Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence, to conduct research and achieve development of one or more Licensed Products and Licensed Processes, as promptly as is commercially feasible. Following Licensee's receipt of necessary regulatory approvals, Licensee or its Affiliates or Sublicensees shall earnestly and diligently produce and sell reasonable quantities of Licensed Products or Licensed Processes sufficient to meet market demands.

b. If a Licensed Product, Licensed Process or License Biological Material is ultimately classified as a Research Tool under Section 2.4, then Licensee shall use commercially reasonable efforts and due diligence, or shall cause one or more of its Affiliates and Sublicensees to use commercially reasonable efforts and due diligence to distribute and make such Research Tool reasonably available to third parties on commercially reasonable terms; *provided*, *however*, that Licensee shall not be obligated to make such Research Tool available pursuant to this Section 6.2(b) to (i) third parties if Licensee reasonably believes that the manufacture, use, offer for sale, sale or import of such Research Tool might infringe the patent or other intellectual property rights of a third party; or (ii) to for-profit third parties if Licensee can reasonably demonstrate that such Research Tool may be materially detrimental to a non-Research Tool it is currently developing and/or commercializing under this Agreement.

c. Licensee shall keep TSRI generally informed as to Licensee's progress in such research, development, regulatory approval, marketing, production and sale, including its efforts, if any, to sublicense Licensed Patent Rights, and Licensee shall deliver to TSRI an annual written report of such efforts by June 30th of each calendar year and such other reports of such efforts as TSRI may reasonably request. In these annual reports, Licensee shall describe its progress in complying with the Commercial Development Plan and in achieving the Benchmarks and shall explain in detail the reasons for any variances thereof. Licensee shall also report in writing to TSRI the dates when it has achieved the Benchmarks and the date of first commercial sale of a Licensed Product or Licensed Process in each country within thirty (30) days of such occurrences. The contents of Licensee's progress reports to TSRI shall be deemed to be

Licensee's Confidential Information. Licensee may amend its Commercial Development Plan and/or the Benchmarks upon TSRI's prior written consent, which will not be unreasonably withheld if such proposed amendment is supported by a detailed showing
by Licensee or its Affiliates or its Sublicensees using its best efforts and due diligence in its performance of research and development of one or more Licensed Products and Licensed Processes.

d. Any time after the Initial Development Period (or such later time as agreed in writing by TSRI and Licensee), in the event (i) TSRI has a reasonable basis to believe, based on Licensee's reports to TSRI, that Licensee is not using commercially reasonable efforts and due diligence as required under Sections 6.1 and 6.2.a, or (ii) Licensee has not achieved the Benchmarks within the time provided in Exhibit C (as may be amended as provided above), TSRI has the right to terminate this Agreement by providing written notice to Licensee, where any such right to terminate shall be subject to a [***] cure period by Licensee. Failure to meet any of the Benchmarks within the time provided in Exhibit C (as may be amended as provided above) shall not constitute a breach by Licensee of this Agreement, but shall entitle TSRI, at TSRI's sole discretion, to terminate this Agreement as provided above or convert the licenses granted under Sections 2.1-2.3 to a non-exclusive license upon delivery of written notice to Licensee. Notwithstanding the foregoing, at any time after the initial one-year period of development under a Commercial Development Plan (where, for the avoidance of doubt, such period shall commence upon the addition to this Agreement of the Licensed Patent Rights that are the subject of such Commercial Development Plan), in the event TSRI has a reasonable basis to believe that Licensee is not using commercially reasonable efforts and due diligence as required as required under Section 6.2.b, TSRI has the right to convert, subject to a [***] cure period, the license granted under Section 2.4 in connection with such Licensed Patent Rights to a non-exclusive license upon delivery of written notice to Licensee.

6.3 Reports on Revenues and Payments. Licensee shall submit to TSRI at the time payment is due after the end of each calendar quarter, on a country-by-country and per Licensed Product and Licensed Process basis, a royalty report (the "**Royalty Report**") setting forth for such quarter:

a. the number of units of Licensed Products sold by Licensee, its Affiliates and each of its Sublicensees;

b. the gross amount due or invoiced for such Licensed Products by Licensee, its Affiliates and each of its Sublicensees;

c. the gross amounts due or invoiced for all Licensed Processes performed by Licensee, its Affiliates and each of its Sublicensees;

d. a detailed listing of any offsets under Section 3.5 and deductions used to determine Net Sales of Licensed Products and Licensed Processes pursuant to Section 1.8, and calculations on Combination Products under Section 3.6;

e. the amount of royalty due under Section 3, or if no royalties are due to TSRI for any reporting period, the statement that no royalties are due and an explanation why they are not due for that quarterly period;

f. the amount of Sublicense Revenues received by Licensee; and

g. the amount of Sublicense Payments due under Section 4.1, or if no Sublicense Payments are due to TSRI for any reporting period, the statement that no Sublicense Payments are due and an explanation why they are not due for that quarterly period.

Such Royalty Report shall be certified as correct by an officer of Licensee. The contents of such Royalty Reports shall be deemed to be Licensee's Confidential Information.

6.4 Royalty Payments. Licensee agrees to pay and shall pay to TSRI with each Royalty Report the amount of royalty and/or Sublicense Payments due with respect to such quarter. If multiple technologies are covered by the licenses granted hereunder, Licensee shall specify which Licensed Patent Rights and Licensed Biological Materials are utilized for each Licensed Product or Licensed Process included in the Royalty Report. All payments due hereunder shall be deemed received when funds are credited to TSRI's bank account and shall be payable by check or wire transfer in United States Dollars.

6.5 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to TSRI in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the country where the sale was made on which the royalty was based to the credit and account of TSRI or its nominee in any commercial bank or trust company of TSRI's choice located in that country, prompt written notice of which shall be given by Licensee to TSRI.

6.6 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for any royalties or other amounts due hereunder or for the accounts of TSRI shall be promptly paid by Licensee for and on behalf of TSRI to the appropriate governmental authority, and Licensee shall furnish TSRI with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government authority. Any such tax actually paid on TSRI's behalf shall be deducted from royalty payments due TSRI.

7. Record Keeping. Licensee shall keep, and shall require its Affiliates and Sublicensees to keep, accurate records (together with supporting documentation) of sales of Licensed Products and Licensed Processes as appropriate to determine the amount of royalties,

Sublicense Payments, Product Development Milestone Payments and other monies due to TSRI hereunder, as well as records regarding the calculations of royalty offsets and Combination Products. Such records shall be retained for at least five (5) years following the end of the reporting period to which such records relate. Such records shall be available during normal business hours for examination and copying by an independent certified public accounting firm selected by TSRI and reasonably acceptable to Licensee for the purpose of verifying that Licensee's reports and payments are accurate and that Licensee is in compliance with this Agreement. In conducting such examinations pursuant to this Section 7, TSRI's accountant shall have access to, and may disclose to TSRI, all records which TSRI reasonably believes to be relevant to the calculation of royalties under Section 3, non-royalty revenues under Section 4 and Licensee's compliance with this Agreement. Such examination shall be at TSRI's expense, except that if such examination shows an underreporting or underpayment of [***] or more for any twelve (12) month period, then Licensee shall pay the cost of such examination (including without limitation TSRI's attorney's fees, accountants fees and other costs), as well as any additional payments that would have been payable to TSRI under this Agreement had Licensee reported correctly, plus interest on such sum at the rate of [***] per month. All payments due hereunder shall be made within thirty (30) days of Licensee's receipt of a copy of the audit report. TSRI may exercise its audit rights under this Section 7 no more frequently than once in any calendar year.

8. Patent Matters.

8.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 8 shall control the prosecution of any patent application and maintenance of any patent included within Licensed Patent Rights. TSRI shall (a) direct and control the preparation, filing and prosecution of the United States and foreign patent applications within Licensed Patent Rights (including without limitation any reissues, reexaminations, appeals to appropriate patent offices and/or courts, interferences and foreign oppositions); and (b) maintain the patents issuing therefrom. TSRI shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties agree that TSRI shall have the right, at its sole discretion, to utilize TSRI's Office of Patent Counsel in lieu of or in addition to independent counsel for patent prosecution and maintenance described herein, and the fees and expenses associated with the work done by such Office of Patent Counsel and/or independent patent counsel with regard to the preparation, filing and prosecution of patent applications and maintenance of patents included within Licensed Patent Rights shall be paid as set forth below. Licensee shall have full rights of consultation with the patent attorney so selected on all matters relating to Licensed Patent Rights. TSRI shall use its reasonable efforts to implement all reasonable and timely requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Licensed Patent Rights.

8.2 Information to Licensee. TSRI shall keep Licensee timely informed with regard to the patent application and maintenance processes. TSRI shall deliver to Licensee copies of all patent applications, amendments, related correspondence, and other related matters in a timely manner.

8.3 Patent Costs. Licensee acknowledges and agrees that the licenses granted hereunder are in partial consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee agrees to pay and shall pay for all expenses referenced in Sections 8.1 and 8.2 hereof. In addition, Licensee agrees to reimburse and shall reimburse TSRI for all patent costs and expenses previously paid or associated with Licensed Patent Rights incurred by TSRI up to the Effective Date, less any such patent costs and expenses previously reimbursed by Licensee under the Option Agreement. Licensee agrees to pay and shall pay all such past and future patent expenses associated with the work on the Licensed Patent Rights performed by TSRI's Office of Patent Counsel and/or its independent counsel within thirty (30) days after Licensee receives an itemized invoice therefor. Failure of Licensee to pay patent costs and expenses as set forth in this Section 8.3 shall immediately relieve TSRI from its obligation to incur any further patent costs and expenses. For the avoidance of doubt, should Licensee not pay any patent costs and expenses due to TSRI or independent counsel within thirty (30) days after Licensee's receipt of any itemized invoice therefor, TSRI shall have the right, at its sole discretion, to cease all patent prosecution and allow Licensed Patent Rights to go abandoned. Such action by TSRI shall not constitute a breach of this Agreement. Payment can be made directly to independent counsel, or to TSRI. Licensee may elect with a minimum of ninety (90) days' prior written notice to TSRI, to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Licensed Patent Rights. Licensee shall remain liable for all patent prosecution and maintenance costs incurred prior to the date of notice of election and for a ninety (90) day period following the date of such notice. Any such patent application or patent so elected shall immediately be excluded from the definition of Licensed Patent Rights and from the scope of the licenses granted under this Agreement, and all rights relating thereto shall revert to TSRI and may be freely licensed by TSRI.

8.4 Ownership. The patent applications filed and the patents obtained by TSRI pursuant to Section 8.1 hereof shall be owned solely by TSRI, assigned solely to TSRI and deemed a part of Licensed Patent Rights.

8.5 TSRI Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Licensed Patent Rights are terminated in accordance with the terms of this Agreement, TSRI shall have the right to take whatever action TSRI deems appropriate to obtain or maintain the corresponding patent protection. If TSRI pursues patents under this Section 8.5, Licensee agrees to use commercially reasonable efforts to cooperate fully, including by providing, at no charge to, all appropriate technical data and executing all necessary legal documents.

8.6 Infringement Actions.

8.6.1 Prosecution of Infringements.

a. Each party agrees to provide written notice to the other party promptly after becoming aware of any infringement of the Licensed Patent Rights by a third party and of any available evidence thereof. After receiving notice from the other party of a possible infringement of the Licensed Patent Rights by a third party, the

parties will consult with each other about whether and to what extent such third party's products or activities are infringing upon the Licensed Patent Rights, and the extent to which the infringing products or activities are damaging sales of Licensed Products. Within ninety (90) days of such notice, Licensee shall notify TSRI of its decision and proposed course of action, where the date of Licensee's notice to TSRI, or the expiration of the ninety (90) day period, shall be known as the "**Commencement Date**". If Licensee determines, in its reasonable commercial discretion, and provides TSRI with its assessment supporting such determination, that the prosecution of such infringement would be commercially unreasonable, and TSRI does not object to such determination, then Licensee shall not have the obligation as set forth under Section 8.6.1(d) to prosecute such infringement and the consequences in Section 8.6.1(d) shall not apply; *provided, however*, that TSRI shall then have the right, but not the obligation, to prosecute such infringement.

b. In the event Licensee is obligated to, pursuant to Section 8.6.1(d) below, or elects to, pursuant to 8.6.1(a) above, pursue a third party infringer, then Licensee may enter into settlements, stipulated judgments or other arrangements respecting such infringement, at its own expense, but only with TSRI's prior written consent, which will not be unreasonably withheld or delayed. TSRI shall permit any action to be brought in its name if required by law, and Licensee shall hold TSRI harmless from any costs, expenses or liability respecting all such infringements. TSRI agrees to provide reasonable assistance which Licensee may require in any litigation arising in accordance with the provisions of this Section 8.6.1, for which Licensee shall pay to TSRI a reasonable hourly rate of compensation, including, without limitation, joining such action as a party plaintiff if necessary or desirable for initiation or continuation of such action; provided that the Licensee reimburses TSRI promptly for any reasonable costs and expenses incurred by TSRI in connection with providing such assistance.

c. In the event Licensee is not obligated to, pursuant to Section 8.6.1(d) below, pursue a third party infringer, then Licensee shall notify TSRI in writing promptly and TSRI shall have the right, but not the obligation, to prosecute such infringement on its own behalf. If TSRI prosecutes such infringement, then TSRI may, at its discretion, convert the licenses granted to Licensee with respect to the patent(s) at issue to a non-exclusive license. Conversion by TSRI pursuant to this Section 8.6.1(c) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of TSRI's prosecution of such infringement.

d. Notwithstanding the foregoing Sections 8.6.1(b)-8.6.1(c), in order to maintain the licenses granted hereunder in force, Licensee shall have the first right and obligation to prosecute any and all third party infringements. Unless Licensee

and TSRI otherwise agree, pursuant to Section 8.6.1(a), that the prosecution of any third party infringement is commercially unreasonable, failure on the part of Licensee to prosecute any third party infringement within six (6) months after the Commencement Date shall be grounds for termination of the licenses granted to Licensee with respect to

the patent(s) at issue, and such patent(s) shall thereafter be excluded from the definition of Licensed Patent Rights. Termination by TSRI pursuant to this Section 8.6.1(d) shall only be applicable to the country or countries within the Licensed Patent Rights that are the subject of Licensee's failure to prosecute such infringement.

8.6.2 Allocation of Recovery. Any damages, settlements or other recovery from an infringement action undertaken by Licensee pursuant to Section 8.6.1 shall first be used to reimburse the parties for the costs and expenses incurred in such action, and shall thereafter be allocated between the parties as follows: (i) [***] to TSRI, (ii) and[***] to Licensee. If Licensee fails to prosecute any such action to completion or if TSRI prosecutes any such action, then any damages, settlements, or other recovery, net of the parties' costs and expenses incurred in such infringement action shall [***].

8.6.3 Defense of Infringements. Licensee shall have the first right, but not the obligation, to defend any suits against Licensee, Affiliates or Sublicensees alleging infringement of any third party intellectual property right due to Licensee's use of the Licensed Patent Rights or its development or commercialization of Licensed Products or Licensed Processes. Licensee shall promptly notify TSRI in writing of such claims, and TSRI and Licensee shall confer with each other and cooperate during the defense of any such action. If Licensee finds it necessary or desirable for TSRI to become a party to such action, TSRI shall execute all papers as may reasonably be necessary to add TSRI as a party to such action. Licensee shall bear all costs and expenses associated with any such suit or action. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate in any such action. In no event shall TSRI have any out-of-pocket liability for costs of litigation or royalties, damages and/or settlement amounts due to any third party (except for costs of its own counsel as provided above). If the third party intellectual property right is held not to be infringed, unenforceable or invalid, any recovery of damages for such suit shall be applied first [***] shall be entitled to keep the balance remaining from any such recovery. For the purpose of clarity, it is acknowledged that this Section 8.6.3 shall in no way limit Licensee's obligations under Section 9.1 to indemnify, defend and hold harmless TSRI with respect to third party claims alleging infringement of such third party's intellectual property rights.

8.6.4 Declaratory Judgment Actions. If a declaratory judgment action is brought naming TSRI or Licensee or any of its Affiliates or Sublicensees as a defendant and alleging invalidity, unenforceability or non-infringement of any Licensed Patent Rights, Licensee or TSRI, as the case may be, shall promptly notify the other party in writing and Licensee may elect, upon written notice to TSRI within twenty (20) days after receiving or giving notice of the commencement of such action, to take over the sole control of such action at its own expense. TSRI shall be entitled to, at its expense, participate in and have counsel, selected by it and reasonably acceptable to Licensee, participate in any such action. If Licensee does not defend any such action, then TSRI shall have the right, but shall not be obligated, to defend such action at TSRI's expense.

9. Indemnity and Insurance.

9.1 Indemnity. Licensee hereby agrees to indemnify, defend (by counsel reasonably acceptable to TSRI) and hold harmless TSRI and any parent, subsidiary or other affiliated entity of TSRI and their trustees, directors, officers, employees, scientists, agents, successors, assigns and other representatives (collectively, the "**Indemnitees**") from and against all claims, suits, actions, damages, liabilities, losses and other expenses, including without limitation reasonable attorney's fees, expert witness fees and costs incurred by the Indemnitees, with respect to any third party claim [***] (collectively "**Claim**"), that arises out of or relates to (a) [***], (b) [***], (c) [***], (d) [***], (e) [***], and/or (f) Licensee's or any Sublicensee's failure to comply with any applicable laws, rules or regulations, except that [***]. Licensee's obligation to defend such Claims shall apply to any third party allegations or disputes that arise out of or relate to any of the items described in subparagraphs (a) through (f) above. Licensee shall not enter into any settlement of such Claims that imposes any obligation on TSRI, that does not unconditionally release TSRI from all liability or that would have a material adverse effect on TSRI's reputation or business without TSRI's prior written consent. Notwithstanding the above, Indemnitees, at their expense, shall have the right to retain separate independent counsel to assist in defending any such Claims. In the event Licensee fails to promptly indemnify and defend such Claims and/or pay Indemnitees' expenses as provided above, Indemnitees shall have the right to defend themselves, and in that case, Licensee shall reimburse Indemnitees for all of their reasonable attorney's fees, costs and damages incurred in settling or defending such Claims within thirty (30) days of each of Indemnitees' written requests. This indemnity shall be a direct payment obligation and not merely a reimbursement obligation of Licensee to Indemnitees.

9.2 Insurance. Licensee shall name TSRI and Indemnitees as additional insured parties on any commercial general liability and product liability insurance policies maintained by Licensee, its Affiliates, and Sublicensees applicable to the Licensed Products, Licensed Processes and Licensed Biological Materials.

9.2.1 Beginning at the time any such Licensed Product or Licensed Process is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by Licensee or by a Sublicensee, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance and product liability insurance in amounts and on terms consistent with industry standards for similarly situated pharmaceutical companies commercializing products, but in no case will such insurance be less than $3,000,000 per incident and $5,000,000 annual aggregate. During clinical trials involving any Licensed Product, Licensed Process or Licensed Biological Material, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance in the same amounts and terms as specified above. Licensee's commercial general liability insurance shall provide coverage for personal injury, broad form property damage, advertising injury, premises-operations, products and completed operations and contractual liability including Licensee's indemnity and other obligations under this Agreement. Licensee may elect to self-insure all or part of the foregoing on commercially reasonable terms, which must be pre-approved by TSRI in writing; *however*, TSRI shall be obligated to approve such self-insurance if Licensee has and continues to maintain minimum cash reserves covering such self-insurance or minimum book equity, in either case in the amount of Five Hundred Million Dollars ($500,000,000), which

Licensee sufficiently demonstrates to TSRI in writing. The insurance coverage amounts specified herein or the maintenance of such insurance policies shall not in any way limit Licensee's indemnity or other liability under this Agreement.

9.2.2 In addition, Licensee, on behalf of itself and its insurance carriers, waives any and all claims and rights of recovery against TSRI and the Indemnitees, including without limitation all rights of subrogation, with respect to either party's performance under this Agreement or for any loss of or damage to Licensee or its property or the property of others under its control. Licensee's commercial general liability insurance policy shall also include a waiver of subrogation consistent with this paragraph in favor of TSRI and the Indemnitees. Licensee shall be responsible for obtaining such waiver of subrogation from its insurance carriers. Licensee's insurance policies shall be primary and not contributory to any insurance carried by its Sublicensees or TSRI. Upon TSRI's request, Licensee shall deliver to TSRI copies of insurance certificates or binders and such waiver of subrogation that complies with the requirements of this Section 9.2.2. Licensee shall provide TSRI with written notice at least fifteen (15) days prior to the cancellation, non-renewal or material change in such insurance described in Section 9.2.1. If Licensee does not obtain replacement insurance providing comparable coverage within such fifteen (15) day period, TSRI shall have the right to terminate this Agreement for material breach under Section 12.3.

9.2.3 Licensee shall maintain such commercial general liability insurance beyond the expiration or termination of this Agreement during (a) the period that any Licensed Product or Licensed Process is being commercially distributed or sold by Licensee or by a Sublicensee, Affiliate or agent of Licensee; and (b) a reasonable period after the period referred to in Section 9.2.3(a) above, which in no event shall be less than five (5) years.

9.3 Pre-Challenge Requirements. Licensee will provide written notice to TSRI at least [***] prior to Licensee directly or indirectly initiating a Challenge in or before any court or patent office. Licensee will include with such written notice [***] to enable the parties to attempt in good faith to mutually resolve such issues.

10. Limited Warranty.

10.1 Limited Warranty. TSRI hereby represents and warrants that, to the actual knowledge of TSRI, and only as of the Effective Date, (a) it is the sole and exclusive owner, appointed agent for licensing or licensee of all right, title and interest in and to the Licensed Patent Rights that exist as of the Effective Date; (b) it has the power and authority to grant the licenses provided for herein to Licensee, and that it has not earlier granted, or assumed any obligation to grant, any rights in such Licensed Patent Rights to any third party that have not been waived that would conflict with the rights granted to Licensee herein; and (c) this Agreement constitutes the legal, valid and binding obligation of TSRI, enforceable against TSRI in accordance with its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.2 Licensee hereby warrants and represents this Agreement constitutes the legal, valid and binding obligation of Licensee, enforceable against Licensee in accordance with

its terms, except with respect to creditor's rights generally and the enforcement of equitable remedies.

10.3 Disclaimer. EXCEPT AS PROVIDED IN SECTION 10.1, TSRI MAKES NO OTHER WARRANTIES CONCERNING LICENSED PATENT RIGHTS, LICENSED BIOLOGICAL MATERIALS OR ANY OTHER MATTER WHATSOEVER, INCLUDING WITHOUT LIMITATION ANY EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS OR ARISING OUT OF COURSE OF CONDUCT OR TRADE CUSTOM OR USAGE, AND DISCLAIMS ALL SUCH EXPRESS OR IMPLIED WARRANTIES. TSRI MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF LICENSED PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT, LICENSED PROCESS OR LICENSED BIOLOGICAL MATERIAL WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING UPON ANY LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS COVERED BY THIS AGREEMENT. FURTHER, TSRI HAS MADE NO INVESTIGATION AND MAKES NO REPRESENTATION THAT THE LICENSED PATENT RIGHTS OR LICENSED BIOLOGICAL MATERIALS ARE SUITABLE FOR LICENSEE'S PURPOSES.

10.4 Limitation of Liability. IN NO EVENT SHALL EITHER PARTY BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION DAMAGES FOR LOSS OF PROFITS OR EXPECTED SAVINGS) ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR ITS SUBJECT MATTER, EXCEPT FOR LIABILITY FOR BREACH BY SUCH PARTY OF ANY OF THE CONFIDENTIALITY PROVISIONS IN SECTION 11 AND EXCEPT FOR LICENSEE'S INDEMNITY UNDER SECTION 9.1. TSRI'S AGGREGATE LIABILITY, IF ANY, FOR ALL DAMAGES OF ANY KIND RELATING TO THIS AGREEMENT OR ITS SUBJECT MATTER SHALL NOT EXCEED THE AMOUNT PAID BY LICENSEE TO TSRI UNDER THIS AGREEMENT. THE FOREGOING EXCLUSIONS AND LIMITATIONS SHALL APPLY TO ALL CLAIMS AND ACTIONS OF ANY KIND AND ON ANY THEORY OF LIABILITY, WHETHER BASED ON CONTRACT, TORT (INCLUDING, BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY), OR ANY OTHER GROUNDS, AND REGARDLESS OF WHETHER A PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. THE PARTIES FURTHER AGREE THAT EACH WARRANTY DISCLAIMER, EXCLUSION OF DAMAGES OR OTHER LIMITATION OF LIABILITY HEREIN IS INTENDED TO BE SEVERABLE AND INDEPENDENT OF THE OTHER PROVISIONS BECAUSE THEY EACH REPRESENT SEPARATE ELEMENTS OF RISK ALLOCATION BETWEEN THE PARTIES.

11. Confidentiality and Publication.

11.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement, and for a period of five (5) years after this Agreement terminates, a party receiving Confidential Information of the other party will (a) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary information; (b) not disclose such Confidential Information to any third party without prior written consent of the other party; and (c) not use such Confidential Information for any purpose except those permitted by this Agreement. Notwithstanding the foregoing, if a party is required by law, regulation or court order to disclose Confidential Information of the other party, the party required to make such disclosure shall (i) promptly send a copy of the order or notice to the other party not later than ten (10) days before the proposed disclosure or such shorter period of time as may be reasonably practical under the circumstances; (ii) cooperate with the other party if the other party wishes to object or condition such disclosure through a protective order or otherwise; (iii) limit the extent of such disclosure to the minimum required to comply with the order or notice; and (iv) use reasonable efforts to seek confidential treatment (i.e., filing "under seal") for that disclosure. In addition, a party may disclose Confidential Information of the other party to its Affiliates and employees, to Sublicensees and potential Sublicensees (in the case of Licensee), or to other third parties who are investors or potential investors in connection with due diligence or similar investigations or in confidential financing documents, provided, in each case, that any such Affiliate, employee, Sublicensee, potential Sublicensee or other third party investor or potential investor agrees in writing to be bound by terms of confidentiality and non-use at least as stringent as those set forth in this Section 11, but with no further right to disclose or otherwise distribute TSRI's Confidential Information.

11.2 Publications. Licensee agrees that TSRI shall have the right to publish in accordance with its general policies, and that this Agreement shall not restrict, in any fashion, TSRI's right to publish.

11.3 Publicity. Except as otherwise provided herein or required by any applicable law, rule or regulation (including, without limitation, rules of the U.S. Securities and Exchange Commission and rules of any stock exchange upon which Licensee's securities may be listed), no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or under any such sublicense agreements, without the prior written approval of the other party, which approval shall not be unreasonably withheld. Scientific publications published in accordance with Section 11.2 of this Agreement shall not be construed as publicity governed by this Section 11.3.

12. Term and Termination.

12.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the licenses granted hereunder, shall terminate upon termination of the royalty obligations as provided in Section 3.10 hereof.

12.2 Termination Upon Mutual Agreement. This Agreement may be terminated by mutual written consent of both parties.

12.3 Termination by TSRI. TSRI may terminate this Agreement as follows:

a. If Licensee does not make a payment due hereunder and fails to cure such non-payment (including the payment of interest in accordance with Section 14.2) within thirty (30) days after the date of notice in writing of such non-payment by TSRI;

b. If Licensee defaults upon its indemnification and insurance obligations under Section 9 and the default has not been remedied within thirty (30) days after the date of notice in writing of such default by TSRI;

c. As provided in Section 6.2;

d. Upon written notice to Licensee in the event of the filing of bankruptcy or the bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy or insolvency laws;

e. If Licensee is convicted of a felony relating to the development, manufacture, use, marketing, distribution or sale of Licensed Products, Licensed Processes or Licensed Biological Materials;

f. In the event Licensee brings any Challenge(s), TSRI has the right to immediately terminate this Agreement without any liability and without any opportunity to cure by Licensee upon written notice to Licensee. In the event that Sublicensee brings any Challenge(s), Licensee agrees that it will terminate such Sublicense;

g. Except as provided in subparagraphs (a) - (f) above, if Licensee commits a material breach of any of its obligations under this Agreement and the material breach has not been remedied within ninety (90) days after the date of notice in writing of such default by TSRI.

12.4 Termination by Licensee. Licensee may terminate this Agreement by giving ninety (90) days' advance written notice of termination to TSRI.

12.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date,
other than the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such expiration in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to expiration in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9, 2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.5, 12.8 and 14 shall also survive the expiration of this Agreement.

12.6 Rights Upon Termination.

12.6.1 Notwithstanding any other provision of this Agreement, upon any termination of this Agreement prior to the regularly scheduled expiration date of this Agreement, the licenses granted hereunder shall terminate and revert to TSRI. Except as otherwise provided in Section 12.7 of this Agreement with respect to work-in-progress, upon such termination, Licensee shall have no further right to develop, manufacture or market any Licensed Product, Licensed Process, or to otherwise use any Licensed Patent Rights or any Licensed Biological Materials. Upon any such termination, Licensee shall promptly return all materials, samples, documents, information, and other materials which embody or disclose Licensed Patent Rights or any Licensed Biological Materials; *provided*, *however*, that Licensee shall not be obligated to provide TSRI with proprietary information which Licensee can show that it independently developed. Any such termination shall not relieve either party from any obligations accrued to the date of such termination, including without limitation the obligation of Licensee to make any and all reports and payments due under Articles 3 and/or 4 with respect to events that occurred prior to such termination or as provided in Section 12.7, in each case in accordance with Sections 6.3, 6.4, 6.5 and 6.6, and to reimburse patent costs and expenses accrued prior to termination in accordance with Section 8.3. Notwithstanding the above, Sections 2.7, 2.8, 2.9, 2.10, 7, 9.1, 9.2, 10.3, 10.4, 11, 12.6, 12.8 and 14 shall also survive the termination of this Agreement.

12.6.2 Any sublicense shall, upon the delivery of written notice by Sublicensee, except those Sublicensee's in default, to TSRI prior to termination of this Agreement, survive termination of this Agreement on the same terms and conditions set forth in the applicable sublicense for a period of [***] following termination of this Agreement (the "**Temporary License Period**"); *provided however*, that if such written notice is not delivered prior to termination of this Agreement, such sublicense shall immediately terminate upon termination of this Agreement. In the event a Sublicensee provides such written notice, as a condition precedent to TSRI's obligation to grant the direct license to such Sublicensee as set forth below, such Sublicensee must pay to TSRI all past due royalties, non-royalty revenue, patent costs and all other monies owed by Licensee to TSRI under this Agreement. Upon TSRI's receipt of all such outstanding monies, TSRI shall enter into a license agreement directly with such Sublicensee (the "**New License Agreement**"). Each New License Agreement shall be subject to the same non-financial terms and conditions as those in this Agreement; *provided*, *however*, that each New License Agreement shall contain substantially the same terms and conditions regarding sublicense scope, sublicense territory, duration of sublicense grant, and diligence obligations of the Sublicensee as the sublicense agreement between such Sublicensee and Licensee. Notwithstanding the above, TSRI's obligation to enter into a New License
Agreement is expressly conditioned upon each of the following: (i) Sublicensee shall agree in the New License Agreement to terms providing that in no event shall TSRI be liable to Sublicensee for any actual or alleged breach of such sublicense agreement by Licensee; (ii) TSRI shall not have any obligations to such Sublicensee other than TSRI's obligations to Licensee as set forth herein; (iii) each New License Agreement shall be subordinate and comply in all respects to the applicable provisions of this Agreement, and the financial terms of each New License Agreement, including without limitation, the running royalty rate, shall be consistent with the terms of the sublicense agreement with Licensee, but shall in no event be less than the

corresponding financial terms set forth in this Agreement, including without limitation the obligation to pay minimum annual royalties and other monetary payments required to be made by Licensee to TSRI; and (iv) in no event shall TSRI be obliged to accept provisions in the New License Agreement (a) unless such provisions correspond to rights granted by Licensee to Sublicensee in conformance with this Agreement, and such provisions are not in conflict with the rights, duties and obligations accruing to Licensee under this Agreement; or (b) where such provisions are inconsistent with the legal obligations under any other sublicense agreement granted by Licensee, or by applicable federal, state or local statute or regulation. In the event Sublicensee does not comply with the provisions of this Section 12.6.2, such Sublicensee's sublicense shall immediately terminate upon expiration of the Temporary License Period. Licensee must include or specifically reference this Section 12.6.2 in each of its sublicense agreements.

12.7 Work-in-Progress. Upon any early termination of the license granted hereunder in accordance with this Agreement, Licensee shall be entitled to finish any work-in-progress and to sell any completed inventory of Licensed Products covered by such license which remain on hand as of the date of the termination, so long as Licensee sells such inventory in the normal course of business and at regular selling prices and pays to TSRI the royalties applicable to such subsequent sales in accordance with the terms and conditions as set forth in this Agreement, provided that no such sales shall be permitted after the expiration of six (6) months after the date of termination.

12.8 Final Royalty Report. Upon termination or expiration of this Agreement, Licensee shall submit a final report to TSRI, and any payments due TSRI and unreimbursed patent expenses invoiced by TSRI shall become immediately payable.

13. Assignment; Successors.

13.1 Assignment. Any and all assignments of this Agreement or any rights granted hereunder by Licensee without TSRI's prior written consent are void, except either party may assign this Agreement or rights granted hereunder without the other party's prior written consent (i) to an Affiliate of the assigning party; or (ii) to a successor in connection with the merger, consolidation or sale of all or substantially all of its assets to which this Agreement relates.

13.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of TSRI and Licensee. Any such successor or assignee of
Licensee's interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

14. General Provisions.

14.1 Independent Contractors. The relationship between TSRI and Licensee is that of independent contractors. TSRI and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than

independent contracting parties. TSRI and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

14.2 Late Payments. Late payments of any and all payments due hereunder shall be subject to a charge of [***] per month, or [***] whichever is greater.

14.3 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, performance, sale and use of any Licensed Product or Licensed Process, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Products or Licensed Processes.

14.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

14.5 No Use of Name. The use of the name "**The Scripps Research Institute**", "**Scripps**", "**TSRI**" or any variation thereof in connection with the advertising, distribution, sale or performance of Licensed Products or Licensed Processes is expressly prohibited. The foregoing notwithstanding, without the consent of TSRI, Licensee may state that it is licensed by TSRI under the Licensed Patent Rights and identify the inventors, their affiliation with TSRI and their relationship to Licensee, and further, Licensee may comply with disclosure requirements of all applicable laws relating to its business, including, without limitation, United Sates and state securities laws.

14.6 U.S. Manufacture. Licensee agrees to abide by the Preference for United States Industry as set forth in 37 CFR 401.14 (I), which includes Licensee's agreement that any Licensed Product or Licensed Process sold in the United States shall be manufactured substantially in the United States.

14.7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall ensure that all foreign laws affecting this Agreement or the sale of Licensed Products or Licensed Processes are fully satisfied.

14.8 Use of Biological Materials. Licensee agrees that its use of any Licensed Biological Materials shall comply with all applicable statutes, regulations, and guidelines. Licensee agrees not to use the Licensed Biological Materials for research involving human subjects or clinical trials in the United States without complying with 21 CFR 50 and 45 CFR 46. Licensee agrees not to use the Licensed Biological Materials for research involving human subjects or clinical trials outside of the United States without complying with the applicable regulations of the appropriate national control authorities.

14.9 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, including without limitation any and all Challenges, shall be settled by binding confidential arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("**AAA**"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

14.9.1 Location. The location of the arbitration shall be in the County of San Diego. TSRI and Licensee hereby irrevocably submit to the exclusive jurisdiction and venue of the American Arbitration Association arbitration panel selected by the parties and located in San Diego County, California for any dispute regarding this Agreement, including without limitation any Challenges, and to the exclusive jurisdiction and venue of the federal and state courts located in San Diego County, California for any action or proceeding to enforce an arbitration award or as otherwise provided in Section 14.9.5 below, and waive any right to contest or otherwise object to such jurisdiction or venue.

14.9.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator, and all arbitrators must have at least ten (10) years experience in mediating or arbitrating cases regarding the same or substantially similar subject matter as the dispute between Licensee and TSRI. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

14.9.3 Discovery. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

14.9.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

14.9.5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, *provided however*, that no punitive damages may be awarded. No court action shall be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties. Notwithstanding anything to the contrary in this Agreement, prior to or while an arbitration proceeding is pending,

either party has the right to seek and obtain injunctive and other equitable relief from a court of competent jurisdiction to enforce that party's rights hereunder.

14.9.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

14.9.7 Confidentiality. Except as set forth below, and as necessary to obtain or enforce a judgment upon any arbitration award, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws or rules or regulations of any stock exchange upon which securities are traded or listed, but will use commercially reasonable efforts to seek confidential treatment for such disclosure.

14.10 Entire Agreement; Modification. This Agreement and all of the attached Exhibits set forth the entire agreement and understanding between the parties as to the subject matter hereof, and supersede all prior or contemporaneous agreements or understandings, whether oral or written. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties.

14.11 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California without regard to its conflicts or choice of laws principles thereof.

14.12 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

14.13 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered
severed from this Agreement and shall not serve to invalidate the remaining provisions thereof. The parties shall make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

14.14 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

14.15 Name. Whenever there has been an assignment or a sublicense by Licensee as permitted by this Agreement, the term "**Licensee**" as used in this Agreement shall also include and refer to, if appropriate, such assignee or Sublicensee (to the extent of such assignment or sublicense).

14.16 Attorneys' Fees. In the event of a dispute between the parties hereto or in the event of any default hereunder, the party prevailing in the resolution of any such dispute or default shall be entitled to recover its reasonable attorneys' fees and other costs incurred in connection with resolving such dispute or default. Notwithstanding anything to the contrary herein, the parties agree that this Section 14.16 shall not apply and attorney's fees and costs shall not be awarded to either party with respect to any Challenge or any action where Licensee alleges that it is not required to comply with or perform some or all of the provisions of this Agreement based upon a good faith claim that any of the Licensed Patent Rights are invalid or unenforceable. TSRI and Licensee each represent that it has been represented by its own counsel in the negotiation and execution of this Agreement. Each party further represents that it has relied solely on the advice and representation of its respective counsel in agreeing to this Section 14.16 and all of the other provisions of this Agreement.

14.17 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by facsimile machine, charges prepaid, or by overnight courier, postage prepaid and shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

| | |
|---|---|
| For TSRI: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-9<br>La Jolla, California 92037<br>Attention: Vice President, Business Development<br>Fax No.: (858)784-9910 |
| with a copy to: | The Scripps Research Institute<br>10550 North Torrey Pines Road, TPC-8<br>La Jolla, California 92037<br>Attention: Chief Business Counsel<br>Fax No.: (858) 784-9399 |
| For Licensee: | Fate Therapeutics, Inc.<br>10931 North Torrey Pines Road, Suite 107<br>La Jolla, CA 92037<br>Attention: Chief Financial Officer<br>Fax No.: (858) 875-1843 |
| With a copy to: | Goodwin Procter LLP<br>Exchange Place<br>Boston, MA 02109<br>Attn: Kingsley L. Taft, Esq.<br>Telephone: (617) 570-1000<br>Facsimile: (6117) 523-1231 |

Notices shall be deemed delivered upon the earlier of (a) when received; (b) three (3) days after deposit into the U.S. mail; (c) the date notice is sent via telefax, telex or cable; or (d) the day immediately following delivery to an overnight courier guaranteeing next-day delivery (except Sunday and holidays).

14.18 Compliance with U.S. Laws. Nothing contained in this Agreement shall require or permit TSRI or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

**IN WITNESS WHEREOF**, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

| TSRI: | LICENSEE: |
|---|---|
| THE SCRIPPS RESEARCH INSTITUTE | FATE THERAPEUTICS, INC. |
| By: /s/ Scott Forrest | By: /s/ J. Scott Wolchko |
| Title: Senior Director, Business & Technology Development | Title: CFO |

**EXHIBIT A**

**LICENSED BIOLOGICAL MATERIALS**

[***]

**EXHIBIT B**

**LICENSED PATENT RIGHTS**

[***]

**EXHIBIT C**

**LICENSEE'S COMMERCIAL DEVELOPMENT PLAN**
(including Benchmarks)

| Benchmark | Timeline |
|---|---|
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |
| [***] | [***] |

Notwithstanding anything to the contrary in the Agreement, in the event that Licensee is unable to achieve a given Benchmark according to its applicable timeline, Licensee may, on a one-time only basis under the Agreement, extend the timeline by [***] by making a [***] payment to TSRI (where, for the avoidance of doubt, all later occurring Benchmark(s) shall also be similarly extended by [***].

**EXHIBIT D**

**INFORMATION AND MATERIALS**

TSRI and Licensee shall add items to this Exhibit D upon mutual agreement.

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December 4, 2020

Ono Pharmaceutical Co., Ltd.
Minase Research Institute
1-1, Sakurai 3-chome, Shimamoto-cho
Mishima-gun, Osaka 618-8585
Japan
Attention: Dr. Toichi Takino

**Re: Collaboration and Option Agreement between Fate Therapeutics, Inc. ("Fate") and Ono Pharmaceutical Co., Ltd. ("Ono"), dated September 14, 2018 (the "Agreement")**

Dear Dr. Takino:

As you know, Fate and Ono are conducting a research collaboration under the Agreement, pursuant to which (i) Fate is conducting research on Collaboration Candidate 1; and (ii) Ono and Fate are conducting research to enable Ono to determine the Ono Antigen Binding Domain for Collaboration Candidate 2, upon which determination the Ono Antigen Binding Domain will be incorporated into Collaboration Candidate 2 for further research and development of Collaboration Candidate 2 under the Agreement. Ono has exclusive options under the Agreement to obtain exclusive licenses to Collaboration Candidate 1 and Collaboration Candidate 2. Capitalized terms used but not defined in this letter will have the meanings given in the Agreement.

With respect to Collaboration Candidate 1, pursuant to Section 2.4.3 of the Agreement, Ono has determined that it does not wish to exercise the Ono Option for Collaboration Candidate 1 and, therefore, Ono wishes to terminate the Agreement with respect to Collaboration Candidate 1, which will be deemed a termination pursuant to Section 11.3 (ONO Unilateral Termination Rights) of the Agreement.

With respect to Collaboration Candidate 2, pursuant to Sections 2.1.1, 2.3.4 and 2.3.5 of the Agreement, Ono has until [***], to determine the Ono Antigen Binding Domain [***]. [***]. As of the date of this letter agreement (the **"Letter Agreement"**), Ono and Fate agree that Ono has delivered to Fate [***] Antigen Binding Domains for [***] and such Antigen Binding Domains for [***] the Ono Antigen Binding Domain.

Accordingly, Fate and Ono, intending to be legally bound, agree as follows effective as of the date set forth above (the "**Letter Agreement Effective Date**"):

1. Fate and Ono agree to terminate the Agreement with respect to Collaboration Candidate 1 effective on the Letter Agreement Effective Date. Such termination will be deemed a termination by Ono pursuant to Section 11.3.1 of the Agreement, and the consequences set forth in Section 11.6.1 of the Agreement will apply to such termination.

2. Collaboration Candidate 1 will become a FATE Cell Therapy on the Letter Agreement Effective Date, and Fate will retain all rights, in its sole discretion, to research, develop and commercialize such FATE Cell Therapy worldwide, alone or with or through any Affiliate or Third Party, without any obligation to Ono.

3. For the avoidance of doubt, Ono represents and warrants that there are no Valid Claims in the ONO Patents or the Joint Patents covering Collaboration Candidate 1 and, therefore, in accordance with [***] of the Agreement, Fate shall have no payment obligations to Ono or any other obligations to Ono under the Agreement or this Letter Agreement in connection with such FATE Cell Therapy.

4. Ono has delivered to Fate [***] Antigen Binding Domains for [***] for incorporation into Collaboration Candidate 2, and Ono hereby notifies Fate pursuant to Section 2.3.4 of the Agreement of its designation of each such Antigen Binding Domain for [***], as Ono Antigen Binding Domains for further Research and Development of Collaboration Candidate 2 in accordance with the Joint Development Plan.

5. Ono agrees that the OABD Research Milestone Fee under Section 6.3.1 of the Agreement is due as of the Letter Agreement Effective Date and shall be paid to Fate in accordance with the Agreement.

[***] Certain information in this exhibit has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the registrant if publicly disclosed.

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Please confirm Ono's understanding of and agreement to the foregoing by signing this Letter Agreement below and returning a signed copy to me at your earliest convenience.

Sincerely,

Fate Therapeutics, Inc.
J. Scott Wolchko
President and CEO

Acknowledged and agreed to by:

Ono Pharmaceutical Co., Ltd.

By: /s/Toichi Takino
Name: Toichi Takino, Ph.D.
Title: Corporate Executive Officer
Executive Director, Discovery & Research

[***] Certain information in this exhibit has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the registrant if publicly disclosed.

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**EXHIBIT A**
ONO ANTIGEN BINDING DOMAIN

**[***]**
[***]
[***]

[***]
[***]

[***]
[***]

[***]
[***]

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[***]
[***]

[***]
[***]

[***]
[***]

[***]
[***]

[***] Certain information in this exhibit has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the registrant if publicly disclosed.

**Exhibit 10.40**

# PATENT LICENSE AGREEMENT

This Agreement (in the following "**AGREEMENT**") is between

**Max-Delbrück-Centrum für Molekulare Medizin in der Helmholtz-Gemeinschaft**
[***]
[***]
[***]
[***]

- in the following "**MDC**" -

and

**Fate Therapeutics, Inc.**
3535 General Atomics Court, Suite 200
San Diego, CA 92121
USA

- in the following **"FATE"** -

MDC and FATE are collectively the **"PARTIES"** or individually a **"PARTY"**

## Preamble

MDC is a public research organization focusing on biomedical research with a mission of translating discoveries from molecular research into applications to improve the prevention, diagnosis, and treatment of major human diseases. MDC has developed antibodies and chimeric antigen receptors targeting the surface protein BCMA, such antibodies and chimeric antigen receptors covered by the PATENT RIGHTS (as defined herein).

MDC desires to have the above described invention be used for the benefit of the MDC and the public, and, therefore, have the invented technology be further developed and commercialized.

FATE is developing novel cell therapies based upon its proprietary platform. The Parties entered into an Option Agreement dated 26.11.2018 (the "OPTION AGREEMENT") by which MDC granted FATE an option to obtain an exclusive license to the aforementioned PATENT RIGHTS. FATE has executed the option and wishes to enter into a license agreement with MDC on the terms summarized in the term sheet attached as Annex 2 to the OPTION AGREEMENT, and set forth herein in this Agreement. MDC is willing to grant FATE such a license.

Now, therefore, for good and valuable consideration, the receipt and sufficiency of which the PARTIES acknowledge, the PARTIES agree as follows:

## § 1 DEFINITIONS

1.1 **AFFILIATE** means any business entity more than 50% owned by FATE (for example a subsidiary meeting this standard), any business entity which owns more than 50% of FATE (for example a parent company meeting this standard), or any business entity under common control with FATE.

1.2 **COMBINATION PRODUCT** means a therapeutic product that consists of (a) a LICENSED PRODUCT component and (b) at least one (1) additional other therapeutically active component sold separately independent of the LICENSED PRODUCT.

1.3 **CONTRACT YEAR** means the calendar year from January 1st through December 31st, however, the first CONTRACT YEAR shall commence on the EFFECTIVE DATE and run through December 31st of that calendar year.

1.4 **EFFECTIVE DATE** means the last date of signature to this AGREEMENT.

1.5 **FIELD** means the diagnosis, prevention, or treatment of disease using engineered cells derived from isolated pluripotent stem cells. For avoidance of doubt, the FIELD does not include cell therapy based upon autologous engineered cells.

1.6 **LICENSED KNOW-HOW** means confidential information of and available to MDC provided by MDC to FATE which is reasonably necessary to practice the PATENT RIGHTS under the AGREEMENT for the sole purpose of developing and/or commercializing LICENSED PRODUCTS.

1.7 **LICENSED PRODUCT** means any therapeutic or diagnostic product in the FIELD where the making, use, sale, offer to sell, or importation of such product in a country would, but for the license granted by MDC to FATE, infringe one or more VALID CLAIMS in such country.

1.8 **NET SALES** means the gross revenue invoiced by FATE, its AFFILIATES, and/or its SUBLICENSEE (collectively "**PROVIDERS"** or each a **"PROVIDER"** as the case may be) from the distribution of a LICENSED PRODUCT to customers, reduced by the following deductions for amounts actually incurred or allowed:

(i) taxes or other governmental charges levied on the sale of such LICENSED PRODUCT (other than income or withholding taxes but including value added tax), as specified in the invoice and to the extent actually paid or remitted to the relevant tax authority,

(ii) rebates and discounts to the extent usual and customary in the industry and specified in the invoice, including without limitation charge-back payments, allowances, and cash and quantity discounts,

(iii) credits or allowances for damaged goods, rejections, returns, or price adjustments of such LICENSED PRODUCT, including without limitation

in connection with recalls to the extent specified in the invoice or otherwise documented, and

(iv) freight and shipping expense, including insurance, on account of sales of LICENSED PRODUCT to the extent specified in the invoice and actually paid by the PROVIDER.

In case distribution is made for a non-cash consideration, the market value on the date of transfer of such non-cash consideration, reduced by any applicable amounts in subsections (i) – (iv) above, shall be considered NET SALES.

In the event that a LICENSED PRODUCT is sold as a COMBINATION PRODUCT, for the purposes of determining royalty payments on the COMBINATION PRODUCT, NET SALES will mean the gross amount billed for the COMBINATION PRODUCT less the deductions set forth above, multiplied by a proration factor that is determined as follows: the proration factor will be determined by the formula [A/(A+B)], where A is the average gross sales price of all LICENSED PRODUCT components during such period when sold separately from the other component(s), and B is the average gross sales price of the other component(s) during such period when sold separately from the LICENSED PRODUCT components.

For clarity, a transaction between FATE and an AFFILIATE and/or between FATE or an AFFILIATE and a SUBLICENSEE, in each case where the purpose is to then further sell, transfer, lease, exchange or dispose of LICENSED PRODUCT or COMBINATION PRODUCT to a non-affiliated arm's length end-user purchaser, shall not be considered a sale of a LICENSED PRODUCT or COMBINATION PRODUCT for the purposes of NET SALES. The subsequent sale of such LICENSED PRODUCT to an arm's length end-user purchaser shall be considered NET SALES for purposes of calculating NET SALES upon billing the end-user purchaser.

1.9 **PATENT RIGHTS** means (a) IP rights as listed in Annex 1, including any patents resulting from pending patent applications, (b) any patent applications claiming priority from the patents and patent applications listed in Annex 1, and any divisionals, continuations, and continuation-in-part applications (and their relevant international equivalents) of the patent applications listed on Annex 1, and the resulting patents, and (c) any patents resulting from reissues, reexaminations, or extensions (and their relevant international equivalents) of the patents described in clauses (a) and (b) above, (d) all counterparts or foreign equivalents of any of the foregoing issued by or filed in any country or other jurisdiction, and (e) SPCs (and equivalent) granted on any right mentioned herein.

1.10 **PHASE I CLINICAL STUDY** means initial clinical studies conducted to obtain data on the safety, tolerability, dosage, or side effects of an investigational new drug, including clinical trials known as phase I or pilot clinical studies known as phase I/IIa in whole or in part, as more specifically defined by the rules and regulations of the FDA or EMA, or a similar development milestone in any national jurisdiction.

1.11 **PHASE II CLINICAL STUDY** means that portion of the drug development and review process which provides for controlled clinical studies conducted to obtain data on the efficacy of an investigational drug in a particular indication and additional safety data, including phase IIb studies, as more specifically defined by the rules and regulations of the FDA or EMA, or a similar development milestone in any national jurisdiction.

1.12 **PHASE III CLINICAL STUDY** means that portion of the drug development and review process in which expanded clinical studies are conducted to gather additional information about the efficacy and safety that is needed to evaluate the overall risk-benefit relationship of an investigational material in an indication, including any clinical trial or study intended to provide evidence for a drug marketing approval, as more specifically defined by the rules and regulations of the FDA or EMA, or a similar development milestone in any national jurisdiction.

1.13 **SUBLICENSEE** means any third party other than an AFFILIATE to which FATE grants a sublicense under a PATENT RIGHT, including sublicensees in all further layers of sublicensing (i.e. sublicensees having been granted a sublicense by a direct sublicensee or by another indirect sublicensee).

1.14 **MDC TECHNOLOGY** means binding domain sequences and CAR sequences, including methods of use, as described in the PATENT RIGHTS.

1.15 **VALID CLAIM** means (i) any pending claim of a pending patent application within the PATENT RIGHTS which patent application has not been pending for more than [***] years and which has not been abandoned or finally rejected without the right of refiling or appeal (or which has not been refiled or appealed within the applicable time period), or (ii) any claim from an issued and unexpired patent included within the PATENT RIGHTS which has not been (a) revoked or held unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction, which decision is final and unappealable or unappealed within the time allowed for appeal, or (b) admitted to be invalid, unpatentable, or unenforceable or lost through an interference, reexamination, or reissue proceeding. For clarity with respect to (i): any pending claim of a pending patent application within the PATENT RIGHTS which has been pending for more than [***] years and later issues, shall be a VALID CLAIM upon issuance.

## § 2 LICENSE

2.1 MDC hereby grants to FATE

- an exclusive (even as to MDC except as specifically provided below), license to the PATENT RIGHTS (“EXCLUSIVE LICENSE”) and
- a non-exclusive license to the LICENSED KNOW-HOW

in each case for the research, development, manufacturing, and commercialization of LICENSED PRODUCTS in the FIELD and in each case without territorial restriction, i.e. worldwide (the EXCLUSIVE LICENSE and

the non-exclusive license to the LICENSED KNOW-HOW are, together, hereinafter referred to as the "LICENSE"). The LICENSE grant is subject to the non-refundable, non-creditable payments by FATE to MDC of all consideration due hereunder. The LICENSE is sublicensable in accordance with Section 2.2 below. MDC retains the following rights in the PATENT RIGHTS:

a) to publish the general scientific findings from MDC's research related to the MDC TECHNOLOGY;

b) to use the MDC TECHNOLOGY in the FIELD solely for MDC's internal research (including cooperation with academic partners), teaching and educationally-related purposes only;

c) transfer material representing the MDC TECHNOLOGY to academic or research institutions for non-commercial research use provided such transfer is made under a market-standard material transfer agreement consistent with the terms and conditions of this AGREEMENT.

2.2 FATE is entitled to grant sublicenses under the LICENSE (including through multiple-tiers) provided however, that: (i) sublicenses granted by FATE shall be consistent with this AGREEMENT; (ii) FATE will require its direct SUBLICENSEES to maintain complete and accurate records relating to sales and revenues of SUBLICENSEE's products according to Section 4.1 below, and provide royalty reports to FATE, including royalty reporting from any indirect SUBLICENSEE, and FATE shall forward to MDC the portions of such royalty reports relevant for accurate calculation of royalties due to MDC; (iii) MDC shall have the right to request that FATE audit FATE's direct SUBLICENSEES according to Section 4.4 below and/or that FATE requests to audit any indirect SUBLICENSEE through FATE itself, a direct SUBLICENSEE or an indirect SUBLICENSEE acting as licensor of the indirect SUBLICENSEE to be audited; (iv) FATE applies [***] efforts to ensure compliance by its SUBLICENSEES to their respective sublicense agreement; and (v) such sublicenses are subject to the requirements set forth under Section 3.5 below.

Royalties will be due on SUBLICENSEES' NET SALES of LICENSED PRODUCTS and paid by FATE to MDC. FATE shall provide to MDC a copy of any direct sublicensing agreement under the LICENSE within [***] after sublicensing has been effective (such copy to be redacted to protect the confidential information of FATE and such direct SUBLICENSEE) and, with respect to any indirect sublicensing agreement a notice containing name and address of the respective indirect SUBLICENSEE, and provide to MDC the respective field of the sublicense and/or the respective LICENSED PRODUCT and the sublicensing fees including, in particular, any royalty payment due under the sublicensing agreement.

MDC agrees to accept as successor to FATE an existing direct SUBLICENSEE in good standing at the date of termination, provided that the SUBLICENSEE consents in writing to be bound by all the terms and conditions of this AGREEMENT in addition to those of the sublicense agreement and provided that SUBLICENSEE indemnifies MDC against all claims resulting from a

potential dispute between MDC and FATE over the effectiveness of termination.

2.3 FATE shall use [***] efforts and shall apply the same degree of effort as [***], to develop or have developed LICENSED PRODUCTS in the FIELD and to obtain the respective market approvals.

Without limiting the foregoing, FATE shall [***]. If FATE does not achieve this, then [***]. FATE will demonstrate the aforementioned [***] through plausible and comprehensible documentation included in annual reports.

2.4 [***]

2.5 [***]

## § 3 LICENSE FEES

In consideration of the rights granted by MDC to FATE under this AGREEMENT, MDC shall receive:

3.1 A non-refundable license fee of € [***] to be invoiced upon execution of this AGREEMENT and due [***] days after receipt of an invoice for same.

3.2 Starting with the first anniversary of the AGREEMENT, and each subsequent anniversary until the fifth anniversary of the AGREEMENT, FATE will pay an annual license fee of € [***].

Starting on the fifth anniversary of the AGREEMENT and on each subsequent anniversary for which the LICENSE is in effect, FATE will pay an annual license fee of € [***].

Annual fees shall be due upon receipt of an invoice and are creditable against royalty payments due to MDC in the same CONTRACT YEAR.

3.3 Milestone fees as follows, upon achievement of any of the following milestones by LICENSEE or its SUBLICENSEES in connection with a LICENSED PRODUCT:

a) [***]

b) [***]

c) [***]

d) [***]

e) [***]

f) [***]

g) [***]

h) [***]

i) [***]

j) [***]

k) [***]

l) [***]

For the first LICENSED PRODUCT, milestone payments [***] above shall be due [***] Milestone payments [***] above shall be due [***].

For the second and all additional LICENSED PRODUCTS, milestone payments a) to l) above will be due [***].

A LICENSED PRODUCT shall be considered a new and distinct LICENSED PRODUCT if such LICENSED PRODUCT has [***]. For clarity, (i) a LICENSED PRODUCT shall include [***], and (ii) use of a LICENSED PRODUCT in [***], shall not constitute a separate LICENSED PRODUCT.

For purposes of the sales milestones [***] above and royalty payments, cumulated NET SALES for a LICENSED PRODUCT in all indications shall be calculated as [***].

Upon achievement of a milestone event, by FATE or a SUBLICENSEE, FATE shall notify MDC within [***] days from such achievement of the applicable event and make the respective milestone payment within [***] days from such achievement of the applicable event. Upon request by FATE, MDC will in due course of business issue an invoice for the respective milestone payment and payment shall be due upon receipt of an invoice.

For clarity, milestone payments are due and payable to MDC for achievement of a milestone by FATE or a SUBLICENSEE.

3.4 Royalties

FATE shall pay royalties in the amount of

(i) [***] on NET SALES of a LICENSED PRODUCT, for [***] NET SALES less than [***] Euro,

(ii) [***] on NET SALES of a LICENSED PRODUCT, for [***] NET SALES of [***] Euro or more.

FATE may reduce royalties due to MDC when [the TOTAL ROYALTY RATE (where TOTAL ROYALTY RATE means royalties due to MDC plus royalties due to unaffiliated third parties for any intellectual property necessary for manufacturing, distribution, commercialization or sale of a LICENSED PRODUCT) exceeds [***]%) on LICENSED PRODUCTS, according to the following scheme: FATE may deduct [***]%) of royalties due to unaffiliated

third parties from those royalties due to MDC, until the TOTAL ROYALTY RATE is [***]; provided, however, that the royalties due to MDC shall not be reduced by more than [***]%).

3.5 Sublicense Revenue

FATE will pay to MDC a sublicense fee on SUBLICENSE INCOME (as defined below) other than royalty payments, generated by FATE from a sublicense agreement in the amount of

a) [***]%) of all SUBLICENSE INCOME if sublicensing occurs [***] and

b) [***]%) of all SUBLICENSE INCOME (as defined below) if sublicensing occurs [***].

SUBLICENSE INCOME shall mean all consideration (including equity received from sublicensee, with the value of such equity to be determined on the basis of fair market value) or payments (including option fees, upfront fees and milestone payments) received by FATE in consideration of a grant of a sublicense under the PATENT RIGHTS to a SUBLICENSEE, but shall exclude the following consideration or payments received by FATE: (a) royalties paid by SUBLICENSEES (which shall be at the royalty rate set forth in Section 3.4 above); (b) amounts received in exchange for the issuance of equity in FATE, up to the fair market value of such equity at the time of its issuance; (c) payments to reimburse documented patent prosecution, maintenance, defense, enforcement costs; (d) payments to reimburse documented costs for research, development or manufacturing activities (including payments for FTEs) incurred after the execution date of the sublicense; and (e) milestone payments to the extent reimbursing FATE for the milestone amounts owed to MDC.

With regard to milestone payments received by FATE, SUBLICENSE INCOME shall be due on milestones not mentioned in Section 3.3 [***] above and, if received for a milestone mentioned above, SUBLICENSE INCOME shall include only amounts exceeding the amounts stated in Section 3.3 [***].

If the sublicense transaction includes other licenses or rights granted by FATE to the SUBLICENSEE, the SUBLICENSE INCOME shall be determined by a fair value allocation of all such licenses, and/or rights granted by FATE to the SUBLICENSEE, with such allocation reasonably determined by FATE in good faith and FATE shall provide reasonable documentation to MDC in support of such apportionment. If MDC has a good faith objection to the apportionment, then MDC will give prompt notice to FATE and the parties shall meet and attempt to agree on which portion of the total payments received by FATE pursuant to such sublicense which constitute SUBLICENSE INCOME. If the parties cannot agree upon such apportionment within a reasonable period of time, WIPO (in accordance with its Expert Determination Rules) shall select an independent expert with at least ten (10) years' experience with intellectual property licensing agreements at a senior officer level in the life sciences industry, to which neither PARTY has reasonable objection, to determine such apportionment, who shall render his or her decision within sixty (60) days after appointment. During such

sixty (60) day period, FATE and MDC shall each have an opportunity to present to such expert its interpretation as it relates to the issue of such apportionment and a reasonable amount of evidence supporting such party's position (in such form as the expert shall determine). In rendering his or her decision, such expert shall be authorized only to choose, as between the FATE's position and MDC's position, that allocation that such expert deems most consistent with the terms and provisions of this AGREEMENT. Such decision shall be final and binding upon both FATE and MDC.

3.6 Royalties with respect to NET SALES accrued during a CONTRACT YEAR, and payments due with respect to SUBLICENSE INCOME received or milestone events achieved during a CONTRACT YEAR, shall be due and payable in accordance with Section 4.2.

Payments required under this § 3 that are due and payable to MDC shall be made to the following account:

[***]
[***]
SWIFT Code: [***]
Bank Code: [***]
Account Number: [***]

MDC has authorized [***] to request and collect payments due under this AGREEMENT, and explicitly agrees that payment to [***] of any amount due under this Agreement shall satisfy such obligation to make payment under this Agreement.

3.7 Payments actually due and owed which are more than [***] calendar days late shall be charged an additional fee at the annual rate of [***] percentage points above the base interest rate set by the European Central Bank but in no event shall such interest rate exceed the maximum rate allowable by law.

3.8 On payments due to MDC under this AGREEMENT which are subject to value added tax, it shall be added in the statutory amount as set forth in the invoice.

3.9 Except as expressly provided for in this AGREEMENT, all amounts payable to MDC hereunder shall be made in Euro. In case any payment which is the calculation basis for any payment due to MDC is received in a different currency, such payment shall be converted to Euro on the date of receipt on the basis of the currency exchange rates of the Frankfurt Stock Exchange.

## § 4 RECORDS AND AUDITS

4.1 During the term of this AGREEMENT and for [***] calendar years thereafter, FATE shall keep and cause its direct SUBLICENSEES to keep complete and accurate records of NET SALES under this AGREEMENT, with such records (i) conforming to General Accepted Accounting Principles and (ii) containing all of the data reasonably necessary for the full computation and verification of the payments due to MDC under this AGREEMENT. As part of the records, FATE shall keep and require SUBLICENSEES to keep copies of the invoices sent to purchasers of LICENSED PRODUCTS for a period of no less than [***] full years following the end of the CONTRACT YEAR to which they pertain.

4.2 Within [***] months after December 31st of each CONTRACT YEAR, FATE shall deliver to MDC a written report including a complete and accurate summary of the sales or other disposition of LICENSED PRODUCTS during such year, the amount of NET SALES during such CONTRACT YEAR, the amount of SUBLICENSE INCOME received during such CONTRACT YEAR, and such other information as is pertinent to calculating payments hereunder. Such reports shall be on a per-country and per-product basis. If no payments are due, a report stating this shall be provided to MDC.

Within [***] of receipt of FATE's annual report, MDC shall issue an invoice for payments due for that CONTRACT YEAR and such payment will be due within [***] of FATE's receipt of such invoice. If this AGREEMENT is terminated, all remaining unpaid royalty payments due and payable to MDC shall be paid within [***] months after the effective date of termination.

4.3 MDC is entitled to audit FATE's records for the preceding [***] month period, solely for verification of reports and payments made to monitor FATE's compliance with payment obligations. Such inspection will take place during regular business hours and be performed by an independent certified public accounting firm. The cost of such inspection shall be borne by [***].

4.4 FATE shall be responsible for requiring its direct SUBLICENSEES to allow FATE, at MDC's request, no more than [***] period, to audit under market standard audit and monitoring provisions. The costs of such inspection shall be borne by [***].

## § 5 PATENT FILING AND PROSECUTION

5.1 MDC remains owner of the PATENT RIGHTS, and the patent records remain in the name of MDC as applicant. MDC shall diligently file, prepare, prosecute, and maintain the PATENT RIGHTS (collectively "PATENT PROSECUTION") within its reasonable discretion using qualified intellectual property counsel of MDC's choice. MDC and its outside counsel will provide FATE reasonable advance opportunities to advise MDC, and MDC agrees to cooperate with FATE, with respect to PATENT PROSECUTION as pertinent to the FIELD and FATE's respective suggestions and requests will be reasonably considered and included unless MDC reasonably concludes in good faith that they are not beneficial to the PATENT RIGHTS.

Notwithstanding the foregoing, the Parties agree that MDC has the final decision-making authority with respect to any dispute on PATENT PROSECUTION, provided however that MDC will file, prosecute, and maintain continuation and divisional applications containing claims pertaining to the LICENSED PRODUCTS as FATE reasonably requests in the National Filing Jurisdictions of PCT patent application [***]. MDC's patent attorney(s) will directly copy FATE on all patent correspondence related to the PATENT RIGHTS, and MDC shall keep FATE timely informed with regard to all patent filings and prosecution actions.

5.2 (a) PATENT PROSECUTION [***]; and further provided that if FATE requests that MDC file, prosecute or maintain the PATENT RIGHTS in any country outside of the National Filing Jurisdictions of PCT patent application [***] and MDC does not wish to file, prosecute or maintain the PATENT RIGHTS in such country, MDC agrees to file, prosecute or maintain the PATENT RIGHTS in such country at FATE's cost. FATE may elect not to pay for any fees or expenditures for any patent rights within PATENT RIGHTS, or for any patent rights in a given country within PATENT RIGHTS, in which case the license granted to FATE for those patent applications or patents in PATENT RIGHTS, or for such patent rights in such applicable country, will terminate.

(b) With respect to payment of costs of PATENT PROSECUTION in the US, FATE acknowledges that MDC holds the status of a "small entity" within the meaning of 37 CFR 1.27 because of which MDC is entitled to a reduction of patent costs. FATE further acknowledges that according to the aforementioned rules, FATE's status as exclusive licensee is also relevant for the reduction of patenting costs based on the "small entity" status and, therefore, each of FATE and MDC will monitor its respective status as a "small entity" under 37 CFR 1.27 and immediately inform the other party should it cease to be a "small entity" under these rules. MDC agrees to apply reasonable best efforts to include this provision 5.2(b) into any and all future license agreements into which it enters for the PATENT RIGHTS.

5.3 A PARTY shall inform the other PARTY when becoming aware that a third party infringes a PATENT RIGHT in the FIELD. Neither PARTY will notify a third party (including an alleged infringer) of infringement or put such third party on notice of the existence of any PATENT RIGHT, without first obtaining the written permission of the other PARTY to this Agreement. In case of such an infringement, the following provisions shall apply:

FATE shall have the sole right (but no obligation) to take any action in its sole discretion to prevent or enjoin potential infringement and to claim damages [***]. Where the infringement is solely arising from use(s) outside the FIELD, then FATE shall obtain prior written consent from MDC before pursuing any action to prevent or enjoin such infringement outside the FIELD, which consent shall not be unreasonably withheld. MDC shall provide, [***], such assistance as FATE may reasonably request in connection with any action FATE pursues in accordance with this Section 5.3. If FATE obtains recovery under an infringement action, such recovery shall be allocated [***].

In the event FATE elects not to pursue an alleged infringer within reasonable time after notice of such infringement, but at the latest [***] days before the expiry of any time limit whose observance is necessary in order not to prejudice the procedural situation in defending the PATENT RIGHTS, MDC shall be entitled, but not required, to take such action as it may deem appropriate to prevent or enjoin the alleged infringement. FATE shall provide, [***], such assistance as MDC may reasonably request in connection with any such action. Any recovery obtained by [***].

5.4 In case of nullity/invalidation claims or equivalent proceedings instituted against any PATENT RIGHT by a third party, the PARTIES (and other licensees of the PATENT RIGHTS if such proceeding implicates claims of the PATENT RIGHTS outside the FIELD) shall consult in good faith regarding appropriate actions in response to such claims or proceedings. MDC shall be entitled, but not required, to take action in order to defend the PATENT RIGHT. If MDC fails to take action to defend the PATENT RIGHT(S) within [***] days of the institution of any proceeding against the PATENT RIGHT(S), or such shorter period as necessary to prevent any loss of rights, FATE has the right but not the obligation to independently pursue such defense of the PATENT RIGHT(S) under its own control. In such event, MDC shall take appropriate actions in order to enable FATE to commence a suit or take the actions for defense of the PATENT RIGHT(S). In case FATE does not participate in a defense of the PATENT RIGHT and MDC (and/or potential other licensees of the PATENT RIGHTS outside the FIELD) succeeds in the defense of the PATENT RIGHT, the royalty rate for LICENSED PRODUCTS distributed or applied in the country of the respective PATENT RIGHT shall increase by [***]% compared to the royalty rate otherwise due under Section 3.4 until 100% of the expenses incurred by MDC, and not otherwise reimbursed to MDC (including, without limitation, by potential other licenses of the PATENT RIGHTS outside the FIELD), in the defense of the PATENT RIGHT have been recovered.

## § 6 CONFIDENTIALITY

6.1 “CONFIDENTIAL INFORMATION” as used in this AGREEMENT means all trade secrets, processes, methods, formulae, data, know-how, improvements, inventions, chemical structures, materials, technologies, techniques, marketing plans, strategies, customer lists, or other information that has been created, discovered, or developed by a PARTY or its AFFILIATES, or has otherwise become known to a PARTY or its AFFILIATES, or to which rights have been assigned to a PARTY or its AFFILIATES, as well as any other information and materials that are deemed confidential to or by a PARTY or its AFFILIATES (including without limitation all information and materials embodying such information of a PARTY's customers and any other third party and their consultants), in each case that are disclosed or communicated by such PARTY to the other PARTY under this Agreement. If the CONFIDENTIAL INFORMATION is disclosed orally, visually or in other intangible form, it shall be identified as confidential at the time of disclosure

and reduced to a written summary indicating that it is CONFIDENTIAL INFORMATION delivered to the Receiving Party within [***] days after such disclosure.

6.2 Nondisclosure. Each PARTY agrees that, during the term of this AGREEMENT, and for a period of [***] years thereafter, a PARTY (the "RECEIVING PARTY") receiving (itself or through its AFFILIATES) Confidential Information of the other PARTY (the "DISCLOSING PARTY") or its AFFILIATES (or that has received any such CONFIDENTIAL INFORMATION from the DISCLOSING PARTY or its AFFILIATES prior to the Effective Date) shall (a) maintain in strict confidence such CONFIDENTIAL INFORMATION using not less than the efforts such RECEIVING PARTY uses to maintain in confidence its own confidential information of similar kind and value, which shall not be less than reasonable standard of care, (b) not disclose such CONFIDENTIAL INFORMATION to any third party without the prior written consent of the DISCLOSING PARTY, except for disclosures expressly permitted below, and (c) not use such CONFIDENTIAL INFORMATION for any purpose, except that each PARTY shall have the right to use the other PARTY's CONFIDENTIAL INFORMATION in connection with the exercise of its rights or fulfilling its obligations under this AGREEMENT (it being understood that this clause (c) shall not create or imply any rights or licenses not expressly granted under this AGREEMENT). Notwithstanding anything to the contrary in the foregoing, the obligations of confidentiality and non-use with respect to any trade secret within such CONFIDENTIAL INFORMATION shall survive such [***] year period until the time and unless any of the exceptions set forth in Section 6.3 (Exceptions) below applies to such CONFIDENTIAL INFORMATION.

6.3 Exceptions. The obligations in Section 6.2 (Nondisclosure) shall not apply with respect to any portion of the CONFIDENTIAL INFORMATION that the RECEIVING PARTY can show by competent proof:

a) is publicly disclosed by the DISCLOSING PARTY, either before or after it is disclosed to the RECEIVING PARTY hereunder;

b) later became part of the public domain through no act or omission of the RECEIVING PARTY;

c) was disclosed to the RECEIVING PARTY by a third party lawfully in possession and having the right to disclose it without any obligations of confidentiality;

d) was already known by the Receiving Party prior to the time of disclosure by the DISCLOSING PARTY; or

e) is independently discovered or developed by employees of the RECEIVING PARTY or its AFFILIATES who had no access to, and without reference to, CONFIDENTIAL INFORMATION of the DISCLOSING PARTY.

6.4 Information shall not be deemed to be available to the public or to be in the recipient's possession merely because it:

a) includes information that falls within an area of general knowledge available to the public or to the recipient (i.e., it does not include the specific information provided by the other PARTY); or

b) can be reconstructed in hindsight from a combination of information from multiple sources that are available to the public or to the recipient, if not one of those sources actually taught or suggested the entire combination, together with its meaning and importance.

6.5 Authorized Disclosure. The RECEIVING PARTY may disclose CONFIDENTIAL INFORMATION belonging to the DISCLOSING PARTY to the extent (and only to the extent) such disclosure is reasonably necessary in the following instances set forth in Sections 6.5.1 through 6.5.5 below:

6.5.1 filing or prosecution of PATENT RIGHTS;

6.5.2 regulatory filings and obtaining regulatory approvals;

6.5.3 prosecution or defense of litigation or arbitration, including without limitation responses to a subpoena in third party litigation or arbitration;

6.5.4 subject to Section 6.6 (Securities Filings), compliance with applicable laws (including without limitation the rules and regulations of the Securities and Exchange Commission or any national securities exchange) and with judicial process, if such disclosure is reasonably necessary for such compliance; and

6.5.5 disclosure, solely on a "need to know basis", to

a) the PARTIES' respective directors, officers, employees, advisors and agents, and

b) AFFILIATES, potential and future collaborators (including SUBLICENSEES), potential or actual acquirers, merger partners, or permitted assignees, potential or actual research, development, manufacturing or sales collaborators, or service providers, investment bankers, investors, lenders, or other potential financial partners, each of whom in this sub-paragraph b), prior to disclosure, shall be bound by obligations of confidentiality and restrictions on use of such CONFIDENTIAL INFORMATION that are no less restrictive than the obligations in this Section 6 (Confidentiality); provided, however, that, it being understood that, notwithstanding any other provision of this AGREEMENT, in the case of disclosures made to clinical trial sites, investigators, CROs or other third parties involved in the research and development of LICENSED PRODUCT(s), the duration for the obligation of confidentiality and non-use provided in a PARTY's agreement with such clinical trial sites, investigators, CROs or other third parties may be less than the duration for the obligation of confidentiality and non-use in this AGREEMENT so long as such agreement specifies a duration for the obligation of confidentiality and non-

use at least [***] years from the expiration or termination date of such agreement with clinical trial sites, investigators, CROs or other third parties.

In each of the above situations, sub-paragraphs a) and b), the RECEIVING PARTY shall remain responsible for any failure by any person or entity who receives CONFIDENTIAL INFORMATION pursuant to this Section 6.5 to treat such CONFIDENTIAL INFORMATION as required under this Section 6 (Confidentiality).

6.5.6 If any CONFIDENTIAL INFORMATION is disclosed in accordance with this Section 6.5, such disclosure shall not cause any such information to cease to be CONFIDENTIAL INFORMATION except to the extent that exceptions set forth in Section 6.3 (Exceptions) apply to such CONFIDENTIAL INFORMATION otherwise than by breach of this Agreement). Where reasonably possible and subject to Section 6.6 (Securities Filings), the RECEIVING PARTY shall notify the RECEIVING PARTY of the RECEIVING PARTY's intent to make such disclosure pursuant to this Section 6.5, other than Section 6.5.5 above, sufficiently prior to making such disclosure so as to allow the DISCLOSING PARTY adequate time to take whatever action it may deem appropriate to protect the confidentiality of the CONFIDENTIAL INFORMATION. In this case, the RECEIVING PARTY may disclose only the CONFIDENTIAL INFORMATION of the DISCLOSING PARTY that is advised by its counsel or is legally required to be disclosed and shall cooperate in the DISCLOSING PARTY'S action to protect the confidentiality of such CONFIDENTIAL INFORMATION.

6.6 Securities Filings. If FATE decides to file with the Securities and Exchange Commission or the securities regulators of any state or other jurisdiction a registration statement or any other disclosure document which describes or refers to the terms and conditions of this AGREEMENT under the Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, or any other applicable securities law, FATE shall use reasonable efforts to obtain confidential treatment of the terms and conditions of this AGREEMENT, and shall only disclose CONFIDENTIAL INFORMATION that FATE reasonably believes it is legally required to disclose.

6.7 Relationship to Confidentiality Agreement(s). This AGREEMENT supersedes any prior confidentiality agreements between the PARTIES with respect to treatment of CONFIDENTIAL INFORMATION under this Agreement, provided that all "Confidential Information" disclosed or received by the PARTIES thereunder shall be deemed "CONFIDENTIAL INFORMATION" hereunder and shall be subject to the terms and conditions of this AGREEMENT.

## § 7 PUBLICATION

Notwithstanding anything to the contrary in this AGREEMENT, FATE may publish or present data and/or results including those of any clinical trial relating to a LICENSED PRODUCT or the activities conducted under this Agreement by or on behalf of FATE in journals and/or at conferences. MDC shall have the right to make any publication or presentation of information already made public by FATE with respect to a LICENSED PRODUCT. FATE will provide a courtesy copy to MDC of any publication relating to a LICSNED PRODUCT or the activities FATE conducts under this AGREEMENT.

## § 8 REPRESENTATIONS, WARRANTIES AND INDEMNIFICATION

8.1 Subject to Section 8.2 and 8.3, FATE shall use the PATENT RIGHTS at its own risk. FATE understands and acknowledges that MDC, by this AGREEMENT, makes no representation as to the operability or fitness for any use, safety, efficacy, approvability by regulatory authorities, time and cost of development, patentability, and/or breadth of the MDC TECHNOLOGY. MDC, by this AGREEMENT, also makes no representation as to whether there are any patents now held, or which will be held, by others or by MDC which may be dominant or subordinate to the PATENT RIGHTS, nor does MDC make any representation that the inventions contained in PATENT RIGHTS do not infringe any other patents now held or that will be held by others or by MDC.

With respect to patent prosecution, MDC's diligence shall be limited to (a) managing and overseeing the work conducted by qualified patent counsel of its choice to the same degree of care and diligence generally exercised by research institutions, and (b) reasonably responding to requests made by outside patent counsel in a prompt manner. MDC's liability for payment of damages for patent prosecution shall be limited to those arising from its gross negligence. MDC shall not be liable for mistakes made by its competent outside patent counsel.

8.2 Each PARTY represents and warrants that it has full authority to execute the license and undertake the obligations therein.

Each PARTY represents and warrants that the execution of this Agreement by such PARTY does not create a breach or default under any other agreement to which it is a party or by which it is bound, nor violate any Law or regulation of any court, governmental body or administrative or other agency having jurisdiction over such PARTY.

8.3 MDC represents that it has the authority to grant the rights in the EXCLUSIVE LICENSE under the PATENT RIGHTS and the LICENSED KNOW-HOW and that the PATENT RIGHTS are free and clear of any liens, charges and encumbrances that would adversely affect the rights granted to FATE hereunder. MDC represents and warrants that on the EFFECTIVE DATE there are no actions, suits or claims pending, asserted, or threatened challenging MDC's ownership or control of the PATENT RIGHTS. MDC represents and warrants that to the best of its knowledge or what reasonably should have

been known as of the EFFECTIVE DATE, it is the exclusive owner of the PATENT RIGHTS and that it has received all assignments of rights and interests from each inventor of the PATENT RIGHTS. Should MDC's actual knowledge of any of the representations and warranties made in this Section 8.3 materially change, MDC shall notify FATE in due course of business.

8.4 MDC represents and warrants that it shall not (a) enter into any agreement, instrument or understanding, oral or written, with any third party or (b) grant any license to any third party relating to any of the intellectual property rights it controls, in each case (a) or (b) which would conflict or interfere with any of the rights or licenses granted to FATE hereunder during the term of this AGREEMENT.

8.5 FATE agrees to hold harmless and indemnify the MDC, as well as their officers, employees and agents (collectively, "INDEMNITEES") from and against any claims, demands, or causes of action whatsoever, including without limitation those arising on account of any injury or death of persons or damage to property caused by, or arising out of, or resulting from, the exercise or practice of the license granted hereunder by FATE, its AFFILIATES and SUBLICENSEES or their respective officers, employees, agents or representatives.

8.6 MDC and FATE are not acting as agents or contractors for the respective other party. This AGREEMENT shall not create a partnership among the PARTIES.

8.7 FATE, by execution of this AGREEMENT, acknowledges and agrees that it has not been induced in any way by MDC or any of their employees or agents to enter into this AGREEMENT.

8.8 Neither PARTY shall use the name, trademarks, or other marks of the other PARTY without its advance written consent.

## § 9 TERMINATION

9.1 This AGREEMENT shall continue in effect on a country-by-country basis until the expiry of the last-to-expire VALID CLAIM in such country, unless earlier terminated according to Sections 9.2 to 9.4 below.

9.2 In the case of any material breach, the non-breaching PARTY ("Non-Breaching Party") may without prejudice to any other remedies available to it at law or in equity, deliver a written notice to the breaching PARTY describing the alleged breach in sufficient detail to put the breaching PARTY on notice ("Notice"). Once the Notice has been delivered, the PARTIES will consult in good faith concerning the alleged default. If such breach is not cured within a reasonable time-frame not exceeding a [***] month period from the date of Notice ("Cure Period"), the non-breaching PARTY has the right to terminate the AGREEMENT with [***] months written notice. If, however, a breach is not susceptible to cure within the Cure Period, then,

the non-breaching PARTY's right to termination shall be suspended only if and for so long as the breaching PARTY has provided to the non-breaching PARTY a written plan that is reasonably calculated to effect a cure and such plan is acceptable to the non-breaching PARTY, and the breaching PARTY commits to and does carry out such plan as provided to the non-breaching PARTY.

Without limiting possible reasons for a material breach, the following acts or omissions shall be considered a material breach by FATE:

a) failure to pay any license fee owed under Sections 3.1 to 3.5 by the applicable due dates;

b) failure to provide reports due to MDC by the applicable due date and expiry of a cure period of at least [***] days to be set in writing by MDC;

c) refusal to materially cooperate in an audit inspection allowed by Section 4.3;

d) breach of a development obligation under Sections [***] in particular;

e) use of the PATENT RIGHTS and/or the LICENSED KNOW-HOW outside the FIELD; or

f) challenge of the validity of a PATENT RIGHT by FATE or a SUBLICENSEE.

If FATE becomes aware of a SUBLICENSEE's breach of any material obligation to FATE or to MDC, FATE will promptly provide written notice (1) to MDC describing such breach and (2) to SUBLICENSEE requesting an immediate cure of such breach. If SUBLICENSEE fails to cure the breach in a reasonable amount of time as provided for in the applicable sublicense agreement (with such reasonable amount of time not to exceed [***] months, FATE will communicate this to MDC and discuss with MDC what actions are suitable against SUBLICENSEE and what actions FATE shall take to cause SUBLICENSEE to cure the breach. If, after another [***] months, SUBLICENSEE still has not cured the breach, FATE shall reasonably consider terminating the sublicense with such SUBLICENSEE and shall notify MDC of its reasons and, if FATE in its discretion, does not terminate the sublicense, the actions and/or remedies FATE has opted.

9.3 This AGREEMENT may be terminated by FATE without cause with [***] months prior written notice to MDC, provided that the effective date of termination shall be the last day of the month in which such [***] months' notice expires.

9.4 This AGREEMENT shall end automatically when FATE becomes subject to insolvency proceedings, or when FATE undergoes voluntary or involuntary dissolution or suffers the appointment of a receiver or trustee over all, or substantially all of its assets.

9.5 If this AGREEMENT is terminated for any cause:

a) nothing herein will be construed to release the PARTIES of any obligation matured prior to the effective date of the termination (including FATE's payment of royalties as agreed in Section 3.4 above);

b) after the effective date of termination, FATE will provide MDC and cause SUBLICENSEES to provide MDC with a written inventory of all LICENSED PRODUCTS in process of manufacture, provided that any such LICENSED PRODUCTS may only be distributed within the [***] month period following such termination if it pays royalties on NET SALES of such LICENSED PRODUCTS, and any other amount due pursuant to the terms of this AGREEMENT;

c) in case of termination by MDC according to Section 9.2, FATE shall immediately refrain from any further distribution /application of LICENSED PRODUCTS as well as all other use of the PATENT RIGHTS;

d) The PARTIES will continue to be bound by the provisions of Section 6 (Confidentiality), Section 8 (Representations, Warranties and Indemnification), and Section 10 (General) of this AGREEMENT; and

e) for clarity, termination shall not cause repayment of any part of the license fees paid by FATE or SUBLICENSEES to MDC while this AGREEMENT was in effect.

## § 10 GENERAL

10.1 The rights and licenses granted by MDC in this AGREEMENT are personal to FATE and may not be assigned or otherwise transferred without the written consent of MDC, which consent shall not be unreasonably withheld. MDC shall provide such consent upon request from FATE for any assignment to a third party who is acquiring all or substantially all of FATE's stock or assets associated with performance under this AGREEMENT, but MDC reserves the right to deny consent if the ASSIGNEE does not provide MDC with a written statement signed by an authorized representative of ASSIGNEE that ASSIGNEE assumes all of FATE's rights and obligations under this AGREEMENT. Any assignment made contrary to this Section 10.1 shall be null and void. This Agreement benefits and binds the parties and their respective successors and permitted assigns.

10.2 Any notice required by this AGREEMENT shall be in writing and shall be mailed, hand-delivered or faxed (with original to follow within due course), unless otherwise indicated by a PARTY in writing:

Addressed in the case of MDC

[***]

[***]

Addressed in the case of FATE to:

Fate Therapeutics, Inc.
Attention: General Counsel
3535 General Atomics Court
Suite 200
San Diego, California 92121
Fax: [***]

10.3 MDC, FATE and SUBLICENSEES must comply with all applicable national, state and local laws and regulations in connection with their activities pursuant to this AGREEMENT.

10.4 Failure of a PARTY to enforce a right under this AGREEMENT will not act as a waiver of that right or the ability to later assert that right relative to the particular situation involved.

10.5 The invalidity or unenforceability of any provision of the AGREEMENT shall not affect the validity or enforceability of any other provision hereof. In the place of the invalid provision, a valid provision is presumed to be agreed upon which comes economically closest to the one originally agreed upon.

10.6 This AGREEMENT constitutes the entire and only agreement between the PARTIES for subject matter herein and all other prior negotiations, representations, agreements, and understandings are hereby superseded. No agreements altering or supplementing these terms may be made except by a written instrument signed by the PARTIES. This also applies to this form provision.

10.7 This AGREEMENT shall exclusively be governed by the laws of [***] under exclusion of any of its conflict of law rules causing the application of any foreign law. All claims or controversies arising under this AGREEMENT shall be exclusively and finally decided by the courts of [***] to whose jurisdiction the PARTIES hereby irrevocably submit.

The PARTIES hereto have caused their duly authorized representatives to execute this AGREEMENT.

**Max-Delbrück-Centrum für Molekulare Medizin in der Helmholtz-Gemeinschaft**

| | | | |
|---|---|---|---|
| Signature | /s/ Dr. Thomas Sommer | Place, Date | Berlin, 10.09.2019 |
| Name | Prof. Dr. Thomas Sommer | | |
| Title | Scientific Director | | |

| | | | |
|---|---|---|---|
| Signature | /s/ Dr. Heike Graßmann | Place, Date | 10.08.2019 |
| Name | Prof. Dr. Heike Graßmann | | |
| Title | Administrative Director | | |

**FATE**

| | | | |
|---|---|---|---|
| Signature | /s/ J. Scott Wolchko | Place, Date | San Diego, CA, 30 Aug 2019 |
| Name | Scott Wolchko | | |
| Title | President & CEO | | |

**Annex 1**

**PATENT RIGHTS:**

[***]

[***]

[***]

[***]

[***]

[***]

**Exhibit 23.1**

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the following Registration Statements:

1. Registration Statements (Form S-3 Nos. 333-213590, 333-215460, 333-219987, 333-224680 and 333-228513) of Fate Therapeutics, Inc., and

2. Registration Statements (Form S-8 Nos. 333-191576, 333-194625, 333-202690, 333-209392, 333-211484, 333-215880, 333-219989, 333-223521, 333-230152, and 33-236835) pertaining to the 2007 Equity Incentive Plan, the 2013 Stock Option and Incentive Plan, 2013 Employee Stock Purchase Plan, and the Inducement Equity Plan of Fate Therapeutics, Inc.;

of our reports dated February 24, 2021, with respect to the consolidated financial statements of Fate Therapeutics, Inc. and the effectiveness of internal control over financial reporting of Fate Therapeutics, Inc. included in this Annual Report (Form 10-K) of Fate Therapeutics, Inc. for the year ended December 31, 2020.

/s/ Ernst & Young LLP

San Diego, California
February 24, 2021

**Exhibit 31.1**

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER**
**PURSUANT TO RULE 13a-14(a) AND 15d-14(a) OF THE SECURITIES EXCHANGE ACT,**
**AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, J. Scott Wolchko, certify that:

1. I have reviewed this Annual Report on Form 10-K of Fate Therapeutics, 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 24, 2021

/s/ J. Scott Wolchko
J. Scott Wolchko
*President and Chief Executive Officer*
*(Principal Executive Officer)*

**Exhibit 31.2**

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO RULE 13a-14(a) AND 15d-14(a) OF THE SECURITIES EXCHANGE ACT,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Edward J. Dulac III, certify that:

1. I have reviewed this Annual Report on Form 10-K of Fate Therapeutics, 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 24, 2021

/s/ Edward J. Dulac III
Edward J. Dulac III
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**

I, J. Scott Wolchko, President and Chief Executive Officer of Fate Therapeutics, Inc. (the "Registrant"), do hereby certify in accordance with 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, based upon my knowledge:

(1) this Annual Report on Form 10-K of the Registrant, to which this certification is attached as an exhibit (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m); and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant.

Date: February 24, 2021

/s/ J. Scott Wolchko
J. Scott Wolchko
*President and Chief Executive Officer*
*(Principal Executive Officer)*

**Exhibit 32.2**

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,**
**AS ADOPTED PURSUANT TO**
**SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Edward J. Dulac III, Chief Financial Officer of Fate Therapeutics, Inc. (the "Registrant"), do hereby certify in accordance with 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, based upon my knowledge:

(1) this Annual Report on Form 10-K of the Registrant, to which this certification is attached as an exhibit (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m); and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Registrant.

Date: February 24, 2021

/s/ EDWARD J. DULAC III
Edward J. Dulac III
*Chief Financial Officer*
*(Principal Financial and Accounting Officer)*